

A. The Parties

1. AAI is a closely-held New Jersey corporation. Compl. ¶ 5 (Ex. 1).¹ AAI was founded by and is controlled by Dr. Xialou Wang. Id.

RESPONSE: Admitted, except Dr. Wang's first name is Xiaolu.

2. Defendant Citigroup Global Markets, Inc. ("CGMI"), formerly known as Salomon Smith Barney, Inc., is a New York corporation and a wholly owned subsidiary of Citigroup, Inc. Compl. ¶ 6 (Ex. 1); Answer ¶ 6 (Ex. 2); Defendants' Rule 7.1 Statement (Ex. 3).

RESPONSE: Admitted.

3. Defendant The Yield Book, Inc., formerly known as Salomon Analytics, Inc., is a Delaware corporation and a wholly owned subsidiary of Citigroup Global Markets, Inc. Answer ¶ 6 (Ex. 2); Defendants' Rule 7.1 Statement (Ex. 3).

RESPONSE: Admitted.

B. Defendants' Software Product, The Yield Book

4. Defendant The Yield Book, Inc. develops, markets and licenses an analytical and quantitative software product known as the Yield Book (the "Yield Book"). CGM 03452 (Ex. 4 (selected pages from the Yield Book website at the relevant time)); Answer ¶ 8 (Ex.) (The Yield Book, Inc.'s "principal function is to develop, maintain, implement, market and license an analytical and quantitative software product called The Yield Book...").

¹ Unless otherwise indicated, all documents, court filings, correspondence, interrogatory responses, other discovery requests and deposition testimony, expert reports, declarations, court orders and court conference transcripts ("Summary Judgment Materials") cited in Defendants' statement are attached as exhibits to the Declaration of Christopher P. Moore in Support of Defendants' Motion for Summary Judgment, dated February 15, 2008 ("Moore Dec."), and are cited in this statement as "Ex. __." In addition, unless otherwise indicated, all Summary Judgment Materials cited in AAI's response to Defendants' statement are attached as exhibits to the Declaration of Russell Munves in Opposition to Defendants' Motion for Summary Judgment, dated April 24, 2008 (the "Munves Dec."), and are cited in AAI's response as "Munves Ex. __", or the Declaration of Todd S. Collins in Opposition to Defendants' Motion for Summary Judgment, dated April 24, 2008 (the "Collins Dec."), and are cited in AAI's response as "Collins Ex. __". To the extent possible, in order to avoid further burdening the Court, AAI cites to the Exhibits contained in the Moore Dec. rather than attaching those same Exhibits to the Munves Dec. or the Collins Dec.

RESPONSE: Admitted, except that it is the Mortgage Research Department of CGMI, not The Yield Book, Inc., that did most of the development of The Yield Book (“TYB”) software product. (Cite Hayre, Mandel, Russell) Hayre dep. tr. (Collins ex.)

5. The Yield Book incorporates models for analyzing financial instruments, including government and corporate bonds and mortgages. CGM 03452 (Ex. 4).

RESPONSE: Admitted.

6. Defendants first developed the Yield Book in 1989 for use by their employees. CGM 03452 (Ex. 4). Soon thereafter, Defendants made it available to Defendants' customers free of charge. Id.

RESPONSE: Admitted.

7. In mid-1996, Defendants began to license Yield Book to institutional portfolio managers, investment advisors, insurance companies, banks and hedge funds for a licensing fee. CGM 03452 (Ex. 4).

RESPONSE: Admitted.

8. This licensing generated \$10.3 million in revenue in 1996 and \$19.2 million in 1997. CGM 03465 (Ex. 5); Expert Report of Dr. Anthony Sanders ("Sanders Report") at 17 (Ex. 6) ("The Yield Book showed considerable growth and viability up through the June 1998 date of alleged misappropriation.").

RESPONSE: Admitted, except that prior to June 1998 TYB executives evinced concern that the 200 path production sequence was not sufficiently accurate, and clients complained about speed and stability of the sequence. Sanders dep. tr. 168-170 (Collins ex. A).

9. The Yield Book can be used to analyze, among other financial instruments, collateralized mortgage obligations, including mortgage-backed securities ("MBS") and asset-backed securities ("ABS"). CGM 03452 (Ex. 4).

RESPONSE: Admitted.

10. The Yield Book model for analyzing MBS and ABS has four components: (1) a CMO payment history and structure database; (2) a Monte Carlo simulation, or sequence generator; (3) the term structure of interest rate model; and (4) the prepayment and default model. Decl. of Robert A. Russell ("Russell Decl.") ¶; Russell Tr. at 60:19-66:1(Ex. 7); Hayre Tr. at 110:23-112:11(Ex. 8); Sanders Report at 3-4 (Ex. 6).

RESPONSE: Denied. Items (3) and (4) are part of TYB model, but a CMO payment history and structure database, item (1), are not part of TYB model. As for item (2), a Monte Carlo simulation, or sequence, is a key part of the model, but a "sequence generator" is not. Declaration of Dr. Xiaolu Wang ("Wang Dec.") at ¶¶ 1-3 (Collins ex. E).

11. The most important component of the Yield Book model for analyzing MBS and ABS is the prepayment and default model, followed by the term structure model. Hayre Tr. at 50:6-11 (Ex. 8) ("Q: ...And then the next line says 'Call risk key property of many MBS/ABS.' What does that mean? A: That means a prepayment -- the prepayments are a key sort of factor in determination of -- of valuing MBS and ABS."); id. at 246:25-247:6 ("A: This is a misconception about valuation of IOs. I mean, the sampling errors are a third-order effect. It's not even a second-order effect. The prepayment assumptions are by far the most important, and then the term structure assumptions are second."); Sanders Tr. at 25:10-20 (Ex. 9) ("When you say the prepayment model is the most important thing, you mean that in at least the four models that you vetted, the prepayment model was the most important of the four components. Is that accurate?

A: I'll go further than that. I would say in terms of CMO valuation, prepayments, in addition to the models examined, in general, the prepayment is the most important determinant of CMO valuation.").

RESPONSE: Objection: the reference to “most important component” is vague and ambiguous. By way of further response, denied. The prepayment model depends on the term structure model, which depends on the sequence. Therefore, the sequence is more important than either the prepayment model or the term structure model with respect to valuing MBS and ABS. Wang Dec. at 3 (Collins ex.). Defendants’ testing of ACE, 1997-1998, revealed that TYB’s then-current 200 path production sequence overpriced Principal Only Strips (“POs”) in the range of 150 basis points (“bps”) and also overpriced Interest Only Strips (“IOs”); by contrast, Defendants’ prepayment model made much smaller errors (less than 10 bps). (AAI 994-999) (Collins ex. B); **Chart** __ (Munves ex. K).

Thus, Defendants themselves demonstrated that the errors and possible variations in pricing caused by Defendants’ sequences were far in excess of those caused by the prepayment model they used in TYB. See AAI 0659-74 (Collins ex. O)

As Defendants’ counsel admitted in a letter to the Court: “Defendants’ highly confidential trade secret information [regarding the method Dr. Teytel allegedly used in creating Defendants’ mixed-seed sequences] that we now know Dr. Wang improperly had in his possession for more than six weeks *could hardly be more important, and its impermissible disclosure to Dr. Wang could hardly be more injurious to defendants and their substantial investments in the Yield Book.*” December 3, 2007 letter (emphasis added) (Collins ex. D).

With respect to Dr. Sanders, Defendants’ expert, Defendants’ executives believe the speed with which MBS and ABS is valued is more important than Dr. Sanders does. Sanders

dep. tr. ¶¶ 168-170 (Collins ex. A). In addition, Dr. Sanders was mistaken about, and apparently unaware of, ACE's superior accuracy in comparison to The Yield Book's 200 path production sequence, as demonstrated by Defendants' 1997-1998 tests of ACE. *Id.* at p. 105. Finally, Dr. Sanders is no expert in the field of sequences or the valuation of MBS and ABS. **cite** For all these reasons, Dr. Sanders' opinions should be disregarded.

12. The Monte Carlo simulation component is the least important component of the Yield Book model. Hayre Tr. at 246:25-247:6 (Ex. 8); Sanders Tr. at 25: 10-20 (Ex. 9).

RESPONSE: Denied. Plaintiff repeats and incorporates herein by reference its Response to No. 11.

C. AAI's Purported Development Of The ACE Numbers. Its Claimed Trade Secret

13. Dr. Xiaolu Wang is the founder and sole principal of AAI, which he formed after leaving his employment with International Business Machines Corporation ("IBM") in order to develop the ACE Numbers. Wang Tr. at 203:20-24 (Ex. 10) ("A: I started the process to develop ACE right after I left IBM I started working on say for instance [collecting] the literature and starting mathematics starting from scratch."); *id.* 411:23-412:4 ("Q: Why did you decide to leave IBM? A: I want to do research on my own. Q: What type of research? A: Such as ACE. ").

RESPONSE: Objection to the reference to the "ACE Numbers", which reference is vague, ambiguous and misleading. ACE consists of sequences. These sequences can be represented by a matrix of numbers, which are arranged in rows and columns. Wang Dec. at ¶6 (**Collins ex.**). By way of further response, denied. Dr. Wang left IBM to do research on his own. The subject matter of this research eventually led to the creation of the ACE sequences, but Dr. Wang was "starting from scratch". Ex. 10, pp. 411:23-412:4; 203:24. Dr. Wang "started the process to develop ACE" only after he left IBM. *Id.* at 411:20-21.

14. According to AAI, the ACE Numbers purport to be a new class of low-discrepancy sequences, which possess extraordinary uniformity. CGM 00001-5 (Ex. 11) ("Today AAI announces its discovery of a completely new class of LDS, which possess[] extraordinary uniformity ...").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Defendants quote out of context from AAI's brochure. AAI did not state that ACE constituted only a new class of low discrepancy sequences ("LDS"). Instead, AAI stated that ACE resulted from a third generation of simulation technology, Intelligent Simulation. This third generation represented an advance beyond Deterministic Simulation, which used LDS, and Monte Carlo simulation, which used pseudo-random sequences or Latin Hypercube sequences. Ex. 11 (CGM 00001-5); Wang Dec. ¶6 (Collins ex. E).

15. Dr. Wang had worked for IBM from 1993 to February 1996, during which time he was a primary developer of an IBM product called the Deterministic Simulation Blaster ("DSB"). Wang Tr. at 340:10-13 (Ex. 9) ("Q: We discussed yesterday briefly when you began working at IBM, would you remind me what year that was? A: 1993."); id. 365:25-366:13 ("Q: Was this a joint project between you and Dr. [Shu] Tezuka to develop the deterministic simulation blaster? .. Q: Did the two of you work on that project together while you were at IBM? A: Yes, that's correct. Q: Did anyone else work on that project with you during the time you were at IBM? A: No, just the two of us."); IBM 0001-8 at IBM 0007 (Ex. 12) (IBM General Release and Covenant Not To Sue signed by Dr. Wang on February 23, 1996.).

RESPONSE: Admitted.

16. Like the ACE Numbers, DSB was intended to replace the Monte Carlo simulation, or sequence generating component of models used for pricing collateralized

mortgage obligations, with a low-discrepancy sequence. AAI 0951 (Ex. 13) ("IBM Corp. has unveiled a pricing system for derivatives, such as collateralized mortgage obligations and other complex securities that it claims will significantly improve the speed and accuracy in valuation of these instruments. The technology uses a breakthrough upgrade of a mathematical approach--called a deterministic simulation or a low discrepancy sequence approach-to price securities. This is in contrast to a more widely used Monte Carlo simulation ... ").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. DSB was not, and was not intended to be, "[l]ike the ACE Numbers". DSB and ACE were different in numerous material respects. ACE was far more sophisticated, entailing 30 pages of code as opposed to a much smaller amount of code for DSB. Wang dep. tr. 874:21- 875:5 (Collins ex. F) DSB was intended for derivatives that require or can allow tens of thousands of paths of simulation. Although CMOs can be considered derivatives, pricing CMOs usually allows only a few hundred paths. As test results published by IBM have shown, DSB does not outperform Monte Carlo simulation where the numbers of paths are below 5,000. In general, in pricing CMOs, it is preferable to use sequences consisting of 1000 or fewer paths. Wang Dec. 10-12 (Collins ex.); Wang dep. tr. 874:21—875:5 (defense counsel did not ask Dr. Wang to explain differences between ACE and DSB) (Collins ex. F).

17. While low-discrepancy sequences had previously been used in pricing derivatives, DSB purportedly incorporated a new class of low-discrepancy sequence with better properties and characteristics, covering as evenly as possible the universe of the spectrum of prices for the variable being assessed, such as interest rates. AAI 0977-978 (Ex. 14) ("Our breakthrough is that we discovered a new class of low-discrepancy sequence with much better properties and characteristics than the classical low-discrepancy sequence' says [Xiaolu] Wang."); AAI 0981

(Ex. 15) ("Deterministic simulation, the methodology used by DSB, addresses both the speed and the accuracy problem at once by ensuring that market prices generated by the system are evenly distributed across the possible spectrum and that no duplicate prices are allowed to occur."); AAI 0951 (Ex. 13) ("The deterministic simulation approach covers as evenly as possible various dimensions of the [pattern followed by the underlying rates] and estimate the shape or value of that entire pattern by calculating only a part of it ... ").

RESPONSE: Admitted, except that: Even though pricing MBSs and CMOs was an ultimate goal for DSB, DSB did not successfully price MBSs or CMOs, but only other types of derivatives. These other types of derivatives have dimensions much lower than the hundreds of dimensions required for CMOs and permit the use of thousands of paths. For example, DSB could be used to recalculate a three-year index amortizing swap. Wang Dec. at para. 11 (Collins ex. E); **March 1996 Asian Business article (Ex. 14 at AAI 978)**. For the three-year amortizing swap, up to 100,000 simulations are used. **AAI 952** (Collins ex. G). **See also November 1995 Shorts article (Ex. 15 at AAI 981)** ("Mark Garman, president of California-based Financial Engineering Associates, warns users against thinking of the DSB as a silver bullet. 'This new form of deterministic simulation may work much better for some instruments than for others,' he says. 'It is important to test any new model or program thoroughly before moving into live operations.'"). At his deposition, asked about AAI 3127 – 30 (Collins ex. H), Dr. Wang testified: "This appears to be the test while IBM used those tests for public demos. These results are used in public demonstration. . . . The chart here, the graph here, the picture in this document, appears to be the risk landscape, if you may call, for a derivative such that if you run 10,000 paths, you could get pretty accurate Monte Carlo. So

instead of running a million paths, you could achieve 1,000 – one-hundredth of the time.”

Wang dep. tr., 787:25 – 788:16 (emphasis added) (Collins ex. I).

18. According to Dr. Wang, he first implemented and tested his idea of using low-discrepancy sequences in place of traditional Monte Carlo simulation in models for valuing path dependent variables, such as the interest rates used in valuing collateralized mortgage obligations, while he was working at IBM. Wang Tr. at 361:8-12 (Ex. 10) ("A: ... but my idea was, you know, using some more specific low discrepancy sequence to see if it work or not, but I have not yet do any testing or anything to see whether it work or not [prior to being contacted by Dr. Shu Tezuka while employed at IBM]. .. ").

RESPONSE: Objection: the reference to “implemented” is vague and ambiguous. By way of further answer: denied. It was before Dr. Wang started work for IBM that he first conceived the idea of testing low-discrepancy sequences in place of traditional Monte Carlo simulation in models for valuing path dependent variables. Wang dep. tr. 356:15-16, 357:11-13 (at the time Dr. Wang began research on DSB in 1994, “I had this kind of idea in Monte Carlo simulation for years”) (Collins ex. J). In any event, the concept of DSB is far more complicated than simply incorporating the idea of using low-discrepancy sequences in place of traditional Monte Carlo simulation. The idea itself had become public knowledge. See No. 17 above (“While low-discrepancy sequences had previously been used in pricing derivatives”). The development of DSB was intended to create low-discrepancy sequences that would work in pricing simple derivatives such as the three year swap. Wang Dec. at 12 (Collins ex. E).

19. DSB incorporates Dr. Wang's idea of using low-discrepancy sequences in models for valuing path dependent variables. Wang Tr. at 361:8-12 (Ex. 10); id. at 363:9-13 ("Q: Your

idea to use low discrepancy sequences is reflected in the deterministic simulation blaster? ... Q: Yes."); AAI 0951 (Ex. 13); AAI 0977-978 (Ex. 14); AAI 0981 (Ex. 15).

RESPONSE: Admitted. By way of further answer, AAI repeats and incorporates by reference its responses to No. 17-18.

20. All "right, title and interest in any idea, invention, design of a useful article ... and computer program and related documentation" of which Dr. Wang conceived during his employment (other than those relating to marine architecture specifically set forth in the Addendum to the IBM Agreement Regarding Confidential Information and Intellectual Property dated November 2, 1993), including DSB, are the property of IBM, not Dr. Wang. IBM 0009-11 (Ex. 16) ("IBM Agreement Regarding Confidential Information and Intellectual Property") ("The Agreement shall exclude [Dr. Wang's] research on marine architecture ... ").

RESPONSE: Admitted, except such agreement did not pertain to information in the public domain. **Information in the public domain included the idea of using low discrepancy sequences to value derivatives.** Wang Dec. at 13 (Collins ex. E).

21. IBM never succeeded in licensing DSB to anyone. Sanders Report at 10 n. 31 (Ex. 9) ("There is no evidence in this matter that DSB was sold to anyone. Furthermore, counsel has informed us that IBM has represented that it had no DSB sales.").

RESPONSE: Denied. Neither Dr. Sanders, who is Defendants' purported damages expert, nor AAI has any first hand information on this subject, apart from inadmissible hearsay. No. 21 must be disregarded by the Court on Defendants' motion for summary judgment, because Defendants have put forward no admissible evidence in support of the contention that IBM did not license DSB, or in support of the implicit contention ("IBM never *succeeded* . . . ") that IBM ever tried to license DSB.

22. Dr. Wang, in his capacity as founder and sole principal of AAI, claims to have been the sole developer of the ACE Numbers. Wang Tr. at 268:4-6 (Ex. 10) ("Q: Did anyone assist you in development of the ACE sequences? A: No, I did all by myself.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted that Dr. Wang was the sole developer of ACE.

23. The ACE Numbers that Dr. Wang developed use a low-discrepancy sequence designed to value path dependent variables, such as the interest rates used in valuing ABS and MBS. Wang Tr. at 268:4-6 (Ex. 10); id. at 187:4-190:9 ("Q: Are the ACE numbers low discrepancy sequences? A: Yes. Q: Are low discrepancy sequences designed to distribute the numbers within that sequence evenly? A: It was the goal, but they never achieve that. Q: ACE never achieved that? A: Yes, if its in unit intervals, unit hyper cubes ... Q: [ACE] was first generated in hyper cube and by generated in hyper cube do you mean in a way such that the numbers would be evenly distributed? A: Yes, that's correct.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. By way of further response, the production of ACE sequences uses low discrepancy sequence formulae, but a lot more than that. The methodology creating ACE is a newer generation of simulation methodology called Intelligent Simulation, beyond Deterministic Simulation (which is synonymous with using low discrepancy sequences). Wang Dec. at 14 (Collins ex. E).

24. In developing the ACE Numbers, Dr. Wang analyzed "Holton sequences, Faure sequences, Sobol sequences," "Vander Corput" sequences, "Hammersley" sequences, and "Niederreiter" sequences, all of which he testified were "publicly available low discrepancy sequences." Wang Tr. at 246:7-247:15 (Ex. 10).

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. AAI repeats and incorporates by reference its responses to Nos. 22-23.. By way of further answer, AAI admits that Dr. Wang analyzed such sequences, all of which were publicly available low discrepancy sequences, but Dr. Wang also invented and experimented with many proprietary sequences, including proprietary low discrepancy sequences. Wang Dec. at 15 (Collins ex. E).

25. AAI made efforts to market the ACE Numbers to no fewer than 70 different entities, including investment banks, commercial banks and government agencies. Plaintiffs Amended Responses to Defendants' First Set of Interrogatories at No.2 (Ex. 17) (Listing 70 entities in response to interrogatory asking for AAI to "[i]dentify all persons who participated, at any time, in any discussion or negotiation concerning the actual or potential licensing of ACE").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Most of these entities contacted AAI or otherwise showed interest in ACE without AAI making any marketing efforts directed to them. Most of the 69 entities that before 1999 contacted AAI or otherwise showed interest in ACE indicated to AAI that they would start license negotiations with AAI following the completion of Defendants' testing and following Defendants' entering into a licensing agreement with ACE. Wang Dec. at 16-17 (Collins ex. E).

26. AAI has never succeeded in licensing the ACE Numbers to anyone. Wang Tr. at 116:21-25 (Ex. 10) ("Q: Has anyone ever licensed any version of the ACE sequence whether it's the 32 path version, the 64 path version, the 128 path version or any other version? A: No.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted that AAI never licensed ACE to anyone, though AAI believes many

of the 69 entities that before 1999 contacted AAI or otherwise showed interest in ACE would have licensed ACE had Defendants not stolen ACE and had Defendants carried through with their promise to license ACE. It must be noted that AAI had to suspend the marketing and testing of ACE, as a result of Defendants' wrongdoing, by 1999. Wang Dec. at 16-17 (Collins ex. E).

27. AAI has not produced any software code to defendants that would permit one to generate any of the ACE Numbers. Wang Tr. at 162:10-13 (Ex. 10) ("Q: Your testimony is as you sit here today you do not in fact have the code that's used to generate the ACE sequences. A: That's correct.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response denied. AAI produced over 70 code files, each of which generates sequences that AAI has developed or experimented with during the research process of ACE. AAI produced such files, because AAI understood that it had an obligation to produce all code files created in the research and development process for ACE up until the time of Defendants' misappropriation. These 70-plus code files include the code files that generate all four ACE sequences that Defendants tested (a 32 path sequence, two 64 path sequences, and a 128 path sequence). Dr. Wang only indicated that, at the particular time of his deposition, he had not identified which code generated all the ACE sequences tested by Defendants. In comparison to AAI, Defendants can determine with greater certainty, and at no greater effort, which of the 70-plus code files generate the ACE sequences that Defendants tested, because only Defendants are in possession of the test system Defendants used in testing ACE. Wang Dec. at 20 (Collins ex. E).

28. AAI opposed Defendants' requests for production of the software code used to generate the ACE Numbers and related software development information. Defendants' First Request for the Production of Documents at Doc. Request No. 17 (Ex. 18) (seeking "[a] 11 documents concerning the development, marketing and/or use of ACE."); Plaintiff's Response to Defendants' First Request to Plaintiff for the Production of Documents, dated February 28, 2005 (Ex. 19) (objecting to Request No. 17 as "overbroad and ... not reasonably calculated to the discovery of admissible evidence", but agreeing to produce "documents concerning the marketing of ACE"); January 25, 2006 Letter from C. Moore to the Court at 1 (Ex. 20) ("I also write to request that the Court order AAI to produce information and documents AAI has refused to produce including ... electronic information concerning the development and use of AAI's [ACE] software ... "); Order dated March 2, 2006 at 2 (Ex. 21) ("Defendants' application to compel production of documents and information concerning plaintiff's development and use of ACE Numbers is granted. Plaintiff is directed to respond to Defendants' discovery requests seeking this information no later than March 15, 2006.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted. It is AAI that claims that Defendants misappropriated its trade secrets and needs Defendants' production of sequence selection and testing code for prosecution of its claim, which Defendants have refused to produce. Defendants have not claimed that AAI misappropriated ACE from Defendants. Wang Dec. 21 (Collins ex. E).

29. AAI then unsuccessfully sought reconsideration of this Court's Order requiring AAI to produce the software code used to generate the ACE Numbers and related software development information. Plaintiff's Motion for Reconsideration dated March 16, 2006 (Ex. 22);

Order dated March 22, 2006 at 1 (Ex. 23) ("Plaintiff is directed to comply with my March 2, 2006 Order forthwith.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted.

30. On March 31, 2006, Dr. Wang informed the Court that he was "presently involved in gathering, assembling, and copying the documents and information concerning AAI's development and use of ACE Numbers These are very time-consuming work." Decl. of X. Wang dated March 31, 2006 ¶ 2 (Ex. 24).

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted.

31. AAI then unsuccessfully sought Judge Swain's reversal of the Court's March 2, 2006 Order. Memorandum and Order dated May 2, 2006 (Ex. 25) ("[T]he Court has reviewed thoroughly the relevant orders and Plaintiffs objections and finds that Judge Pitman's decisions are neither clearly erroneous or contrary to law, and, accordingly, they will stand.").

RESPONSE: Admitted.

32. On August 23, 2007, Dr. Wang initially testified that some of the code used to develop the ACE Numbers was stored on diskettes. Wang Tr. at 153:7-22 (Ex. 10) ("Q: What information did you remove from that computer prior to giving it to your brother? A: I saved - - removed all code and the code that I had in development of ACE sequence and I removed - - deleted any information, proprietary information and so I format a disk, there's nothing left. Q: What did you do with that information? A: I saved the information to floppy diskettes. Q: Where are those floppy diskettes today? A: I believe they are all in my possession.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted.

33. Dr. Wang then testified that he could not find any of the diskettes containing the code used to develop the ACE Numbers. Wang Tr. at 162:10-163:21 (Ex. 10) ("Q: Your testimony is as you sit here today you do not in fact have the code that's used to generate the ACE sequences? A: That's correct. Q: Have you produced in this litigation the code used to generate the ACE sequences? .. A: I have not been able to identify or locate the floppy diskettes I saved those code ... No. Q: Why not? A: Because I have not located or identified the source code for the sequence. Q: Did you search for the source code? A: Yes. Q: Have you at any time in the past ten years had in your possession, custody or control the code used to generate the ACE sequences? A: I believe so. Q: Have you at any time since May of 2004 had in your possession, custody or control the code used to generate the ACE sequence? A: I have not been able to do so. A: Why not? A: I didn't find the floppy diskette - identified the floppy diskette that I saved the information.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted.

34. Dr. Wang then testified that he had found diskettes containing code used to develop the ACE Numbers but they were not readable. Wang Tr. at 163:22-164:5 (Ex. 10) ("Q: You just testified a few minutes ago that you believed you had the floppy diskettes in your custody, is that not correct? A: I have the floppy diskettes in my custody, but over a period of time the floppy diskette some of them become unreadable.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. "The floppy diskettes in your custody" were referring to Dr. Wang's

diskettes collection. Dr. Wang didn't testify "that he had found the diskettes containing code used to develop the ACE Numbers". Nor could anyone have so said about unreadable diskettes. From the question, clearly he only believed that the unreadable diskettes might possibly have contained the code. (Wang Dec. 22). (Collins ex. E).

35. On August 23, 2007, Dr. Wang testified that he kept development materials related to the ACE Numbers in detailed notebooks. Wang Tr. at 247:25 -248:8 (Ex. 10) ("Q: You don't have any documents or electronic information that relate to the apparent weaknesses that you discovered in any of those low discrepancy sequences as you sit here today, do you? A: I did this in a detailed notebook actually at the time of the development."). Dr. Wang shipped his development notebooks (the "Notebooks") to his unoccupied house in Maryland. Id. at 248:10-16 ("A: I was very careful about the notebooks so in 1996 I was living in a condo and many people have access to my apartment so I was fearful about that so I shipped the notebooks to my house in Maryland when I was planning to move back there as soon as I get the - - I store it in the house."); id. at 254: 11-16 ("Q: Did anyone live at the Maryland address at the time that the notebook was stolen? A: I was the one who lived there, but I was the only person that have possession of that property, no one else."). Dr. Wang testified that the Notebooks were then stolen from his Maryland house, a theft that he testified he reported to the police, and for which he filed an insurance claim. Id. at 249: 13-250: 17 ("Q: I'd like to see [the Notebooks]. Can you provide those to me? A: I'm sorry, I cannot. Q: Why not? A: They were stolen ... Q: Someone break into your house and steal your notebooks? A: Someone broke into my house. The house has three floors. It's a single family house with three floors and someone broke into the house through the first floor window, bathroom window ... A: ... they almost ransack my house, took

everything in my house."); id. at 250:25-251:12("Q: Did you file a police report? A: Yes, I did ... Q: Did you file an insurance claim, Dr. Wang? A: Yes.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13 by way of further response, denied. Dr. Wang testified that he transported these notebooks to the Maryland house when he reoccupied it shortly after August 5, 1997, "not to an unoccupied house". As Defendants' citation clearly indicated, "I was the one who lived there" when the break-in happened approximately on August 20, 1997. *See* No.43 below. Dr. Wang clearly testified that he reported to the police in order to secure a warrant to search the suspects in the hope to recover his Notebooks. The police report only listed the property he could swear for sure had been taken by the suspects before they moved out his house on August 5, 1997, not the property lost in the break-in, which was listed in the insurance report (Insurance Filing: AAI 3096-3097 (Collins ex. L)), although he suspected the former tenants committed the break in. Wang Dec. 23 (Collins ex. E)

36. The Sworn Statement in Proof of Loss filed by Dr. Wang with his insurance company does not list the Notebooks as having been stolen. AAI 3096-3097 (Ex. 26).

RESPONSE: Denied. The Sworn Statement included a reference to boxes of books. The Notebooks were among these books. Dr. Wang provided no further specification with respect to the Notebooks, because he did not want to create a record that could fall into the wrong hands and indicate that these valuable Notebooks could be in the suspects' possession. At the time of the filing of the Sworn Statement, Dr. Wang had previously filed a police report. This police report identified the suspects. Dr. Wang was concerned that, if the Sworn Statement listed the Notebooks, persons interested in acquiring the Notebooks and the valuable trade secrets contained in the Notebooks could contact the suspects. In addition, there was no reason to list

the Notebooks as a separate item on the Sworn Statement, because the insurance company would not assign any claim value to the Notebooks. Wang dep. tr. 670:15-25 (Collins ex. M) (“Because I do not want make a public record, as I told you, that my secret is in the notebooks and somebody identified as the suspect might have it. And he might, you know, be contacted if somebody wanted to get it and know who to ask for. If the notebooks have been thrown in trash can, may not be a big loss to me, other than I had lost some of my own development documents. But if the notebooks got into the wrong hands, that will be real loss of trade secrets.”) *See also* Wang Dec. 24 (Collins ex. E).

37. The Notebooks are not listed on the police report relating the burglary of Dr. Wang's Maryland house (the "Police Report"). AAI 3098-3101 (Ex. 27).

RESPONSE: Denied. Although the Notebooks were not specifically enumerated on the police report relating to the burglary of Dr. Wang's Maryland house, the Notebooks were the reason the police report was filed. The police report was filed in order to secure a search warrant, and thus Dr. Wang did not list on the police report the property lost in the break-in that happened on approximately August 20, 1997. Wang Dec. 23 (Collins ex. E)

38. The Police Report indicates that Dr. Wang's house in Maryland was occupied by Dr. Wang's tenants when property was allegedly stolen from it. AAI 3098-3101 (Ex. 27).

RESPONSE: Admitted, except that, as Dr. Wang testified at deposition, there were two incidents involving theft of his property. The tenants occupied the property at the time of the first incident but not the second incident. Wang dep. tr. at 673 (Collins ex. N): “And the notebook theft happened in the break in, as I've explained, from the window. So it happened that I have already taken the possession of my house back to myself. I already had my possession after those suspects had been evicted that took my stuff. this police report was filed for the

purpose for a search warrant for the previous tenants, and I made the statement which say that the list of property were taken definitely by the suspects, because those were in the possession when they rented the house. But I did not, you know, make the statement to the police -- about that they stole the notebook, because I did not know -- I do not know still, sure, that those people were the one broken in. They are suspects because they had lived there for two years, and if they moved some stuff from my house, the neighbors wouldn't suspect. That's my reasoning. And second, their motivation is that I just won from the Court -- the Court order them to pay the back rent. They took my house without -- refuse to pay any rent. So the Court ordered them to pay large sums of back rent. So that might be, you know, there could be conceivable that they had some grievance.

39. Dr. Wang told the police that his tenants had ransacked the home when they vacated the premises. AAI 3098-3101 (Ex. 27).

RESPONSE: Denied. Dr. Wang told the police his tenants took Dr. Wang's property when the tenants moved out. The ransacking of the house occurred two weeks later, at a time that Dr. Wang occupied the premises. Wang Dec. 23 (Collins ex. E)

40. In connection with filing the Police Report, Dr. Wang told the police that he was employed by New York University. AAI 3098-3101 (Ex. 27).

RESPONSE: Denied. The police report listed "NYU" where the form asked, "PLACE OF EMPLOYMENT/SCHOOL/OTHER INFORMATION" of the victim. Ex. 27 (AAI 3098-3101). The incidents that Dr. Wang addressed in the police report occurred some time during the period 1995-1997, as indicated on the police report. Id. (The tenants whom Dr. Wang suspected of taking his property occupied the premises during this period, and Dr. Wang could not know when during this period his property was taken. Dr. Wang did not discover the theft of

his property until he regained possession of the property in August 1997.) Dr. Wang served as a visiting professor at NYU in 1995, during a portion of the period that the tenants occupied the property. The police report form was not clear with respect to whether it sought information about the victim's PLACE OF EMPLOYMENT/SCHOOL/OTHER INFORMATION at the time of the crime or instead at the time of the filing of the police report. Ex. 27 (AAI 3098-3101). At the time of the filing of the police report, Dr. Wang was employed by AAI. Dr. Wang did not want to submit a public record identifying AAI as his current employer, because he was afraid that this could endanger trade secrets contained in the Notebooks. Dr. Wang filed the police report for the sole purpose of attempting to secure a search warrant to retrieve the stolen Notebooks. Wang Dec. 27 (Collins ex. E).

41. Dr. Wang was not employed by NYU at the time the Police Report was filed. Wang Tr. at 668:23-25 (Ex. 10) ("Q: Were you employed by NYU as of the date of this report, Dr. Wang? A: No.").

RESPONSE: Admitted.

42. Dr. Wang testified that the Notebooks were "invaluable" to him. Wang Tr. at 682:18-20 (Ex. 10) ("Q: What value did [the notebooks] have to you, Dr. Wang? A: Invaluable.").

RESPONSE: Admitted. Dr. Wang further testified that what most concerned Dr. Wang was not the loss of the Notebooks, because Dr. Wang could recreate most of the material and analysis contained in the Notebooks. What was of paramount concern to Dr. Wang was the danger that the Notebooks might fall into the wrong hands, which could lead to the loss of valuable AAI trade secrets. Wang dep. tr. 683:23-685:5 (Collins ex. P). (the reason Dr. Wang "press very hard for policeman the crime and get my notebook, the purpose was notebook").

43. On October 26, 2007, Dr. Wang testified that he stored the Notebooks in his Maryland house after it had been ransacked by his tenants, and that during a burglary in the following weeks the Notebooks were stolen. Wang Tr. at 698:04-07 (Ex. 10) ("Q: You decided to leave your notebook in a house in Maryland from which property had already been stolen. Yes or no? A: Yes."); id. at 665:7-666:15 ("Q: So the three notebooks you just described evidenced your development of the ACE numbers? Is that your testimony? A: Yes. That related to. Q: And you shipped those notebooks to your house in Maryland? A: I took those books with me when I live in Maryland. Q: You took those notebooks with you when you lived in Maryland. A: Right. From New Jersey to Maryland. Q: And you lived in Maryland at that time? A: Yeah. For a short period of time I had these with me. Q: When did you live in Maryland, Dr. Wang? A: Short period of time. I lived in 1997, short period of time, and 1998, short period of time. Q: During which one of those short periods of time did you take the notebooks to Maryland? A: 1997. Q: No one was living at the house in Maryland at that time? A: I was. Q: Other than you? A: No. That's right. Q: And the notebooks were stolen from that house? A: That's right."); id. at 671 :2-672:3 ("Q: There's a handwritten statement in the middle of the [Police Report] that states, 'The victim advised that he rented the house at LOI to SI and S2,' which I assume are suspect 1 and 2 - - 'on October 1st, 1995. The victim advised he left the above property at the LOI for suspect 1 or suspect 2 to use while they were renting the house. On August 20, 1997, the victim evicted suspect 1 and suspect 2 for not paying rent. Suspect 1 and suspect 2 moved out with the victim's above property.' Is this what you told the police, Dr. Wang? A: No. It's not accurate statement. Those suspects were evicted at the beginning of August, I believe August 5th, perhaps. And they moved out with my property in the list. Took away my property. And I had possession of my house, changed the lock, and everything. And then I moved back some stuff. After that I came

back to New Jersey. Went back again and found out the windows in the basement was broken, and somebody got in and had ransacked the house and took everything, including the - a case of book which has my notebook.").

RESPONSE: Denied. The ransacking of the house occurred at a later date in August 1997, approximately two weeks after Dr. Wang retook possession of the house, as clearly indicated in the transcript cited above. Wang dep. tr. 671:15-672:4 (after August 5 "somebody got in, and had ransacked the house, and took everything, including the – a case of book which has my notebook. So then I become very, very concerned, and file a police report.") (Collins ex. Q)

44. On October 26, 2007, Dr. Wang testified that the diskettes he had previously testified contained the source code for the ACE Numbers but were unreadable were in fact readable, but they did not contain the source code for the ACE Numbers. Wang Tr. at 711: 1-8 (Ex. 10) ("Q: And you used Bad Copy Pro on the unreadable disks that you described during your last deposition; is that correct, Dr. Wang? A: Yes. Q: What did you find? A: ... It's totally unrelated information.").

RESPONSE: Denied. Dr. Wang never testified that he was certain the unreadable diskettes contained ACE source code. See Response to No. 34. By way of further response, Dr. Wang used Bad Copy Pro to attempt to repair the unreadable disks, and found they did not contain ACE development code as he had previously believed possible. Then, in a renewed search effort, he located 2 diskettes in a Nature and Science magazine jacket. These diskettes contained ACE development code. The next day he turned these over to his counsel for production to defendants. Wang Dec. 28 (Collins ex. E)

45. On or about September 15, 2007, AAI produced two floppy diskettes (the "Diskettes") that Dr. Wang claimed relate to the development of the ACE Numbers, which he

said he found among nature and science magazines in a storage room in his New Jersey home. Wang Tr. at 698:8-20 (Ex. 10) ("Are you familiar with disks that were recently produced by your counsel in this litigation bearing the Bates numbers AAI 10,000 and 10,001? A: Yes. Q: What type of information is contained on those two disks? A: It's also ACE development code. Q: All of the information on those two disks constitutes ACE development code? Is that your testimony, Dr. Wang? A: Yes. Code I had tested during the development of ACE."); *id.* at 699:23-700:20 ("Q: Explain to me how you failed to discover this information in March of 2006. A: The diskettes were in a box which has some magazines . . . had not thought previously I should search those magazine boxes because it's not documents. My documents. My files ... Q: Describe for me what other types of materials were in that box. A: There were journals ... Nature and some science.").

RESPONSE: Admitted, except that the magazines were the British journal Nature and the U.S. journal Science, which were being stored in a bedroom. Defendants left out what followed in the transcript: Q: That related to Monte Carlo simulation? A. No. Q. Related to -- what? A. Related to nothing to the litigation or anything. It's just Nature. Science journals. Q. Nature magazine? A. Nature and some science. Q. Anything related to mathematics? A. No. Q. Nothing related to mathematics in that box? A. It's just science. Q. Do you consider the information contained on these two disks important? A. Yes. Q. Proprietary? A. Yes. Q. Explain to me Advanced Analytics's procedure for storing proprietary, important information. MR. COLLINS: Objection. A. I was trying to do the best I could that, you know, hide those stuff away from obvious places. . . . Those disks I had previously -- I didn't put in the -- with other disks because I thought I should keep them away so would not be obvious target if anyone would know where I live or would take this information. So I put -- so here's my desk. And here

I have magazine, nature and science, in -- what do you call it? Jacket. Folder. So I have those hidden within the magazines. That was . . . 1998. So that's -- when I move from Jersey City to New Brunswick, those get packed together in a box and I'd never thought about it would it be there. Wang dep. tr. 700:12-702:6 (Collins ex. R).

46. It is not possible to generate sequences of numbers from the Diskettes, because the code contained on the Diskettes does not contain all of the necessary inputs for generating the sequences and AAI has not produced those inputs. Wang Tr. at 738:10-13 (Ex. 10) ("Q: You don't know whether any of the 54 files [on the Diskettes] that were produced would actually generate the ACE sequences? A: That's right. I don't know."); id. at 772:20-775:5 (Q: Where can I find the rest of the code that relates to the selection of formulas to be used for each of the dimensions? A: I believe for this code, that's the complete code. The other things, you have to improvise. Q: What do you mean by improvise? A: The parameter, the seed, and the other variables. You have to change it. .. Q: If you change parameters, does it change the formula? .. A: If you change the parameter, yes, it would change the formula. Q: Are all of the parameters reflected in this Exhibit 32 [one of the 54 files contained on the Diskettes]? A. No. Q: Where could I find the parameters that relate to this code? A: It's not. It's not in the code. I don't have them. Q: Without them, can I generate the sequences that would be used in connection with this code? A: No. I mean, you have to redevelop and generate the formula ... Q: By looking at the code reflected in Exhibit 32 and only the code reflected in Exhibit 32, could one generate a sequence of numbers? Or would you need, for example, additional input, like parameters? A: You need additional input, yes."); id. at 775:22-776:4 (Q: Can you point me to any information that has been produced by Advanced Analytics in this litigation that would enable one to generate the ACE sequences? Yes or no? A: Right now? Q: Right now. A: No, I can't.)).

RESPONSE: Denied. Dr. Wang testified “I believe for this code, that's the complete code” for generating the sequences. Wang dep. tr. 772:23-24 (Collins ex. S). Dr. Wang testified that he could redevelop and generate the formula. *Id.* at 774:3-774:17.

47. According to Dr. Wang, the code on the Diskettes was created after Defendants told Dr. Wang that the ACE Numbers should be created with 117 time dimensions. Wang Tr. at 739:8-21 (Ex. 10) (“Q: The next line says 'pound define sways DIM underscore enough space 234.' What does that line represent? A: That's a different constant. 234. Q: And what does 234 represent, Dr. Wang? A: It is the dimension required by defendants. Q: Because 234 divided by two is 117? A: That's correct. Q: So the reason you chose 234 was because the defendants told you that 117 time steps were used by The Yield Book. A: That's correct.”); *_id.* at 760:24-761:22; *_id.* at 728:9-12 (Q: So the only reason that you chose 117 [time dimensions] was because that's what the defendants told you to use. A: Yes.”).

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. The quoted testimony, set forth in No. 47, related to only one among a total of 54 code files contained on the two diskettes that AAI produced to Defendants in 2007.

48. Dr. Wang testified that the ACE Numbers were generated by complicated mathematical formulas that he could not write down for Defendants. Wang Tr. at 193: 19-20 (Ex. 10) (“A: the sequence itself in each dimension are generated by a precise mathematical formula”); *id.* at 176:2-8 (“Q: Can you write down on that piece of paper the formula that is used to generate the ACE sequences? A: No. Q: Why not? A: It's - every dimension formula is different and it's quite complicated.”); *_id.* at 198:14-22 (“A: The formula cannot be, you know, simply taken from backing out from the sequence .. it's not something that you look at [the] number[s] and you know what formula to use, it's not that simple.”).

RESPONSE; AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Dr. Wang testified that he could not create the formulas at Defendants' demand while sitting at his deposition. However, given sufficient time, Dr. Wang could recreate the code that reflects the formulas that generate the ACE sequences. Wang Dec. 30 (Collins ex. E).

49. AAI only produced to Defendants three of the four sequences that Defendants actually tested. Russell Tr. at 228:21-23 (Ex. 7) ("Q: Do you recall testing 32-, 64- and 128-path sequences from Dr. Wang? A: I recall that we did those tests."); Wang Tr. at 118:13-120:17 (Ex. 10) ("A: I believe four sets of ACE numbers they tested. Q: What were the four sets? A: One 2 path and two 64 path and 128 path. Q: Did you produce both of the 64 path sequences to your counsel in this litigation that were tested by defendants? A: I produced one set of 64 path sequence ... Q: Do you have in your possession, custody or control the 64 path sequence that was tested by defendants but not produced? A: I have another - no, I have not found it. Q: No, you haven't found it, is that what you said? A: That's correct.")

RESPONSE: Admitted, except that Defendants could generate all four ACE sequences with the code files that AAI produced. Wang Dec. 31 (Collins ex. E)

D. Defendants' Testing Of ACE

50. The last day of Dr. Wang's employment at IBM was February 23, 1996. IBM00000I-0000008 at IBM000007 (Ex. 12) (IBM General Release and Covenant Not To Sue signed by Dr. Wang on February 23, 1996); Wang. Tr. 413:23-414:12 (Ex. 10).

RESPONSE: Admitted.

51. On February 12 and 13, 1996, Dr. Wang gave a presentation on behalf of IBM at a conference held at the Helmsley Hotel; Dr. Wang's presentation was about the purported

"breakthrough" reflected in the DSB sequence he had developed. Wang Tr. at 204:4-7 (Ex. 10) ("Do you recall delivering a presentation at the New York Helmsley Hotel on February 12th and 13th of 1996? A: Yes, I do."); id. at 205:3-6 ("Q: Where were you employed on the date you delivered the presentation on February 12th and 13th, 1996? A: Also IBM.") id. at 208:8-10 ("Q: What results did you present? A: I just said before the IBM breakthrough."); id. at 209: 19-22 ("Q: The deterministic simulation blaster, that set of numbers, that was the breakthrough? A: Yes."); AAI 1712-1715 (Ex. 28) ("The Third Annual Forum on Pricing and Valuation of Fixed Income Securities and Derivatives, February 12 & 13, 1996, New York Helmsley Hotel-New York City, The Distinguished Faculty Includes .. Xiaolu Wang, PhD, Senior Research Scientist, International Business Machines.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted, except that the presentation of Dr. Wang was for only one day.

52. Dr. Lakhbir Hayre, an employee of Defendants, attended the presentation that Dr. Wang delivered at the Helmsley Hotel in February 1996 and was also a speaker at the conference. Hayre Tr. at 227:6-228:6 (Ex. 8) ("Q: When did you first meet Dr. Wang? A: 1996, I think ... We were both at a conference. We were both speaking. Q: What was the conference about? A: Mortgage-backed - valuation of fixed-income securities ... Q: What was Dr. Wang talking about? .. A: It was - I think it was sort of this - - this quasi Monte-Carlo simulation he had developed at IBM."); AAI 1712-1715 (Ex. 28) ("The Third Annual Forum on Pricing and Valuation of Fixed Income Securities and Derivatives, February 12 & 13, 1996, New York Helmsley Hotel-New York City, The Distinguished Faculty Includes ... Lakhbir Hayre, Director of Mortgage Research, Salomon Brothers.").

RESPONSE: Admitted, except deny that the conference was about mortgage-backed securities, but instead “Pricing and Valuation of Fixed Income Securities and Derivatives”, AAI 1712-1715 (Ex. 28).

53. Dr. Hayre was interested by Dr. Wang's description of IBM's techniques for generating low-discrepancy sequences, and he invited Dr. Wang to make a presentation regarding those techniques to Defendants. Hayre Tr. at 231 :6-13 (Ex. 8) ("Q: So [Dr. Wang] had something you wanted to hear about so you invited him to speak to your people back at Seven World Trade Center. A: Yes. Q: And what was the thing that he had that you wanted to hear about? A: The techniques he had for generating low-discrepancy numbers.").

RESPONSE: Denied. IBM's techniques were not for generating low-discrepancy sequences, but instead DSB consisted of two low-discrepancy sequence generators. In addition, seven months after the February 1996 conference, it was Dr. Chen who invited Dr. Wang to visit Defendants. Dr. Chen made this invitation subsequent to a small social dinner gathering at which Dr. Chen sat near Dr. Wang and heard Dr. Wang say that AAI had succeeded in the invention of ACE.. This was at a time when Dr. Wang was employed by AAI, and it was AAI's techniques, as opposed to IBM's techniques, that Dr. Chen asked Dr. Wang to make a presentation about to Defendants. Wang Dec 33 (Collins ex. E).

54. On September 10, 1996, Dr. Wang made a presentation to several of Defendants' employees regarding his research on low-discrepancy sequences and his incorporation of the fruits of that research into a product he identified as the ACE Numbers. CGM 00001-5 (Ex. 11) (Memo from L. Hayre dated 9/9/96, "Dr. Xiaolu Wang is coming in tomorrow (Tuesday) to give a presentation on his research on low discrepancy sequences (LDS) for improving simulation efficiency.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Dr. Wang's presentation concerned ACE, not solely Dr. Wang's research on low-discrepancy sequences.

55. After the presentation that Dr. Wang delivered to Defendants' employees on September 10, 1996, Defendants agreed to test the ACE Numbers to determine if AAI's claims that "ACE drastically outperforms Monte Carlo simulation" were true. CGM 00001-5 (Ex. 11); Hayre Tr. 236: 19-25 (Ex. 8) ("Q: So wasn't the purpose of this [Mutual Non-Disclosure Agreement] so that you - you wanted to test ACE. A: Urn-hum. Q: You wanted to test Dr. Wang's ACE because you wanted to see if his claims about how good ACE was were true, correct? A: Correct.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13 by way of further response, admitted.

56. On January 7, 1997, Dr. Hayre, on behalf of Defendants, and Dr. Wang, on behalf of AAI, executed a Mutual Non-Disclosure Agreement to facilitate this testing. CGM 00040-46 (the "NDA") (Ex. 29).

RESPONSE: Admitted.

57. The NDA provides that "[i]f any legal action arises relating to this Agreement, the prevailing party shall be entitled to recover all court costs, expenses and reasonable attorney's fees ... " CGM00040-46 (Ex. 29) at CGM 00046. The NDA prohibits the disclosure of Confidential Information, which does not include information that is publicly known or made generally available. *Id.* at 00041 ("Confidential Information shall not include information which (i) was publicly known and made generally available in the public domain prior to the disclosure

by the Disclosing Party ... [or] (ii) becomes publicly known and made generally available in the public domain through no action or inaction by the Receiving Party.").

RESPONSE: Admitted. By way of further response, the terms of the NDA speak for themselves.

58. Defendants performed four tests of various versions of the ACE Numbers (the "ACE Tests"). Russell Decl. ¶ 5; Russell Tr. at 228:21-23 (Ex. 7) ("Q: Do you recall testing 32-, 64- and 128-path sequences from Dr. Wang? A: I recall that we did those tests.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted that Defendants performed four tests on 32-, 64- and 128-path ACE sequences with various portfolios of MBSs and CMOs.

59. Dr. Wang, on behalf of AAI, closely supervised every aspect of each of the four tests. Russell Decl. ¶ 5.

RESPONSE: Objection on grounds that "closely supervised" is vague and ambiguous. By way of further response, denied. In violation of the NDA, Defendants didn't share the code that compiled the test systems for the tests, rigging the systems in order to capture the ACE sequences fed into them. There was no way Dr. Wang could have discovered that, in fact, Russell had installed portions of code that allowed the interest rate scenarios to be saved at testing. From these scenarios, the ACE sequences could then be backed out. **Declaration of Jianqing Fan [Russ: Does Fan address this? If so, give cite]**

60. Each of the four ACE Tests was supervised by Robert Russell, a Vice- President in CGMI's Mortgage Research Department, on behalf of Defendants. Russell Decl. ¶ 5.

RESPONSE: Admitted.

61. Each of the four ACE Tests was conducted on a standalone computer, unconnected to Defendants' network. Russell Tr. at 304:4-22 (Ex. 7) ("Q: What do you remember about the tests? Everything you can recall. A: The tests were done on a standalone machine. Xiaolu would come in with his disk of numbers and the program would be set up. Insert the disk, the machine had been disconnected from the network. And I'm not sure whether the program read the numbers directly from the disk or whether the disk file was copied to the hard disk of the standalone machine and it read it from there. It then - we did the run. It produced a file of results. The input numbers were eliminated. The disk was removed. And at some point, the results file was copied to another machine. I'm not sure if it was a disk or by putting it back on the network or exactly how."); CGM 00034 (Ex. 30) (March 21, 1997 e-mail from R. Russell to W. Wang, "The code for pass-throughs now works on the standalone machine, which has a floppy disk drive installed. We can compile code on that machine, also. Thus to run a test for pass-throughs, we would need a disk with some code and data files that can be read into the standalone machine and then compiled and tested. We would save the price outputs for the various securities and the run the same test with our model, though many times more."); CGM 00037 (Ex. 31) (September 18, 1996 e-mail from R. Russell to X. Wang, "I spoke with our system administrator, Lifan Wang, about having a separate machine on our premises access our network for date. She assures me that we could do this if she had 3 day's notice, and that no one on the network could access the machine without knowing the passwords ... ").

RESPONSE: Admitted.

62. During each of the four ACE Tests, Dr. Wang brought the ACE Numbers to Defendants' office on a disk, the disk was inserted into the standalone computer and a financial

model was run using the ACE Numbers instead of Defendants' existing Yield Book Monte Carlo simulation. Russell Tr. at 304:4-22 (Ex. 7); Russell Decl. ¶ 5.

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, admitted, except that the financial model was the Yield Book software, which was run using ACE sequences in Monte Carlo simulation, replacing the sequence in Defendants' existing Yield Book.

63. During each of the ACE Tests, when the model was finished running, neither the ACE Numbers nor the interest rate scenarios generated by the ACE Numbers was saved. Russell Tr. at 304:4-22 (Ex. 7); id. at 516:12-517:2 ("Q: What information was saved in connection with the testing of the ACE numbers? A: The basic output file, which has a variety of data. Primarily what we would be interested in are the price for OAS, the duration and the convexity. Q: Where the interest rate scenarios saved in connection with the testing of ACE? A: There are two type[s] of interest rate scenarios. There's the input interest rate scenario, where you increase the yield curve by 2 percent or whatever, and then the interest rate path, which one can refer to as a scenario. We did not save the interest rate paths that were used in the ACE calculation."); id. at 518:10-16 ("Q: Dr. Russell, have you ever seen Dr. Wang's ACE numbers? A: I have not. Q: Do you have any reason to believe that Dr. Teytel has ever seen Dr. Wang's ACE numbers? A: I have no reason to believe that."); Russell Decl. ¶ 6.

RESPONSE: Denied. During the last test, either the scenarios or the ACE sequences or other information were saved by Defendants test system to allow Defendants' to capture ACE sequences, unknown to Dr. Wang. Y.K. Chan Depo. "I believe Russell had the skill to do it if he wants to save the scenarios and capture ACE."

184:19 Q. Did Robert Russell have sufficient
184:20 skill to write the code, to write code in Monte.C

184:21 to save interest rate scenarios in memory and
184:22 retain them there after the price was calculated
184:23 for the path?
184:24 A. I think he does.
184:25 Q. And on page 13, you

See Response to section 79 herein.

64. The final ACE test was completed by at least June 26, 1998. AAI 0032 (Ex. 32) (June 17, 1998 e-mail from R. Russell to X. Wang, "I am sending you 18 sets of results for 1008 different seeds; these do not include CMOS, which I shall start running today."); AAI 0033 (Ex. 33) (June 25, 1998 e-mail from R. Russell to X. Wang, "You should be getting 6 separate reports for the CMO runs with 2012 seeds.").

RESPONSE: Denied. The final ACE test was done June 4, 1998, not June 26, 1998. **Wang Dec. (Collins ex.)**. Reports purporting to be analyses of the tests were produced after Defendants had already stolen ACE on June 4, 1998. (Ex. 32, 33)

E. The Parties' Failure To Reach Agreement On A License For The ACE Numbers

65. On or about June 2, 1998, Dr. Wang submitted a proposal to Defendants, which was marked as a "preliminary draft" proposal (the "June 2 Proposal"). AAI 0831-834 (Ex. 34); Compl. ¶ 58 (Ex. 1) ("Dr. Wang drafted a license proposal and forwarded the draft to [Steve] Mandel on or about June 7, 1998 ... "). The June 2 Proposal requested that Defendants agree to a five year term that, among other things, required Defendants to pay in the first year approximately \$1,000,000 and seven percent of Yield Book's revenues for use of ACE. AAI 0831-834 (Ex. 34) at ¶¶ 2, 3(b) and 7.

RESPONSE: Denied. The June 2, 1998 licensing terms (the "June 2, 1998 Terms") were supplied by AAI to Defendants at Defendants' request. The parties reached agreement with respect to the June 2, 1998 Terms. Defendants and AAI reached a meeting of the minds with

respect to the June 2, 1998 Terms in advance of the final ACE Test, which Defendants conducted on June 4, 1998. AAI had insisted that such agreement be reached prior to allowing this final test. Defendants agreed to the June 28, 1998 Terms in part to induce AAI to allow them to conduct this final test. **Wang Dec.** (**Collins ex.**).

66. AAI was seeking to license the ACE Numbers to be incorporated as a component of the Yield Book, and was not seeking to compete with Defendants. Complaint at ¶ 23 (Ex. 1) ("ACE, however, could easily be integrated into The Yield Book ... "); SM 0010 (Ex. 35) (fax from AAI to Defendants comparing Yield Book to "Boeing and Airbus" and AAI to a jet engine producer, offering what it claimed to be a better engine); September 19, 2007 Letter from AAI to the Court at 4 (Ex. 36) ("AAI is certainly not in the business of competing with Citigroup."); Wang Tr. at 206:13-15 (Ex. 10) ("Q: Have you ever been employed as a trader, Dr. Wang? A: No.").

RESPONSE: Denied as stated. As reflected by the June 2, 1998 Terms, the parties contemplated that, in addition to Defendants, AAI would receive ACE license fees from others, including institutions that traded MBS/ABS. AAI always anticipated licensing ACE to a number of institutions, not just Defendants. In addition, Defendants have repeatedly asserted in this litigation that AAI represents a competitive threat and, on this basis, sought to restrict AAI's access to documents designated Highly Confidential. Wang Dec. at 16, 17. (Collins ex. E).

67. Defendants were shocked by the June 2 Proposal. Hayre Tr. at 242:8- 243:12 (Ex. 8) ("Q: He wanted the million dollars? A: Yes. Q: Per year? A: As I recall, yes. Q: And you wanted to pay how much? .. A: I think it was like fifty thousand per year or some number like that... Q: And what did you tell him when he said he wanted a million dollars? A. We thought he was nuts. Q: Did you tell him that? A: No. We thought-I told him he was unrealistic."); Sanders

Report at 6 (Ex. 6) ("When asked how they reacted to learning of the fee components of the June Proposal, SAI personnel replied that they were shocked and that the amount AAI proposed was 'way too high.' This is consistent with Dr. Mandel's deposition testimony describing ACE as an 'accelerator', a tool to improve back office processing, not a trading service.").

RESPONSE: Denied. Dr. Wang informed Dr. Hayre early on what would be the license fee for ACE. After the third ACE tests in April 1998, Dr. Hayre introduced Dr. Mandel to Dr. Wang to negotiate the license detail. Only after the parties agreed on the license fees, as reflected in the June 2, 1998 Terms, did Dr. Wang agreed to enter the fourth and final test on June 4, 1998. At Dr. Mandel's request, Dr. Wang drafted up the June 2 1998 Terms that summarized the agreed license terms. Defendants' purported "shock" was also belied by the revision negotiated between Dr. Wang and Dr. Mandel on or about June 2, 1998, before the June 4th ACE Test. This revision bore Dr. Mandel's handwriting on the details of terms. Wang Dec. 40 (Collins ex. E) In addition, as noted above, the sequence was critically important to pricing, *id.* at 1-3, and ACE was demonstrably superior to Defendants' 200 path production sequence. Wang *Id.* at 5.

68. The license fee and terms in the June 2 Proposal were not acceptable to Defendants. Mandel Tr. at 92:10-20 (Ex. 37) ("Q: Tell me the dynamic of the negotiations; did he make a proposal and did you respond and did he make a new proposal? A: My recollection is that I was willing to pay somewhere in the neighborhood of \$100,000 and he wanted somewhere in seven figures and he kept on coming back with new proposals, but all of them somehow were still in seven figures, so we never closed business between us."); *id.* at 47:22-49:10 ("Q: 'In exchange, AAI will receive 7 percent of the off-site license fee paid to Salomon Analytics by the client.' Do you recall that particular provision [of the June 2, 1998 Proposal] being discussed or considered in the negotiations with Xialou? A: That particular one, no. I recall that there was

some exchange and some other ideas of how we could charge customers more, none of which came to fruition, but I don't remember this idea specifically, no. Q: What were those other provisions? A: I don't remember, I remember Xialou kept trying to come up with other ways to formulate the charges so that he can increase the revenue, his revenue, and none of the ideas were ones that I thought made sense to the Yield Book. But I don't remember the specifics. Q: Did you express that to Xialou? A: Yes. Q: How did you do so? A: I said that we're looking to pay - we were always a huge distance apart; we were willing to pay somewhere around \$100,000 for this product and I don't remember specifically what numbers he was going for, but I remember they were a lot higher and I remember that he kept saying I will come back with a different proposal, but all the proposals were formulated a little differently, but they were always a lot higher than what we were willing to pay.").

RESPONSE: Denied. AAI repeats and incorporates by reference its response to Nos. 65-67.

69. The results of the ACE Tests led Defendants to conclude that the accuracy in valuing securities when using the ACE Numbers was not conclusively better than when using Defendants' existing production code. CGM 00069-95 at CGM 00070 (Ex. 38) ("There are cases in which the production results are better than the ACE64 results and vice versa .. .In general, I had difficulty in finding either set of paths showing clear superiority in results."); Mandel Tr. at 73:22-74:1 1 (Ex. 37) ("Q: You're aware that ACE was tested? A: Yes. Q: Did you ever see any of the test results? A: No. Q: What was the source of your information with regard to the results of the tests? A: Lakhbir telling me the numbers looked okay. Q: What else did he tell you? A: He said the numbers looked okay, that was all I cared to hear."); id. at 25:23-26:9 ("Q: Did you consult with anyone about the accuracy of ACE or lack of accuracy of ACE? A: Yes. Q: Who did you consult with? A: Lakhbir Hayre. Q: What did he tell you? A. I don't remember precisely

what words he used, but he gave the impression that the numbers were fine, they were good enough."); Hayre Tr. at 238:6-19 (Ex. 8) ("Q: But there was a first test and you did test the ACE sequence. A: Yes. Q: And you tested it against the current production sequence at the time in 1997, correct? A: As I recall, yes. Q: And was the ACE sequence faster than the production sequence at the time? A: It had a smaller number of paths. Q: So it was much faster. .. A: No, it had a smaller number of paths and the relative accuracy, I mean - - it was similar, as I recall.").

RESPONSE: Denied. ACE Tests revealed ACE to be extraordinary. Exhibit K to the Declaration of Russell D. Munves in Opposition to Defendants' Motion for Summary Judgment ("Munves Dec."); Dep tr. of Steward Herman at 70 (Collins ex. U); Wang Dec. 5 (Collins Dec.); **Fan Dec. ____**. Defendants' report CGM 00069-95 (Ex. 38) was written by Russell in July 10, 1998 more than one month *after* Defendants had already successfully stolen ACE, and for the sole purpose of misleading AAI and covering up the theft. In fact, Defendants even altered the fourth ACE test results for the same purpose. **Wang Dec. (Collins ex.)**. [***XIAOLU: GIVE CITES TO DEFS' DOCUMENTS PRAISING ACE**]

70. Defendants concluded that the value to using the ACE Numbers would be limited to increased computational speed. Mandel Tr. at 29:2-4 (Ex. 37) ("A: Because to me the advantage of the system were computational efficiency rather than numbers, accuracy of the numbers ... ").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Wang Dec. 1-3 (Collins ex. E); **Fan Dec. ____**. See Response to No. 69 (incorporated by reference).

71. The computational speed of the Yield Book was of little, if any, concern to Defendants. Mandel Tr. at 21 :12-24 (Ex. 37) ("Q: At the time the negotiations with Dr. Wang

were going on, you didn't think there was a need for any better pricing system for MBS? .. Q: At least for Yield Book purposes? A: From an accuracy point of view, there was no need ... From a calculation point of view, speed point of view, it would have been nice ... "); Sanders Report at 14 (Ex. 6) ("In general, I find the concept of increased processing speed in the MBS/ABS application to be a solution in search of a problem.").

RESPONSE: Denied. By way of further response, AAI repeats and incorporates by reference its responses to Nos. 67-70. **Fan Dec. ____.** Wang Dec. 19 (Collins ex. E) (Dr. Sanders, Defendants' damages expert, told Dr. Wang that, based on prior experience at Deutsche Bank he "hated Yield Book" and that Yield Book "took too long to run the portfolios"). Defendants' Yield Book customer support reports were filled with clients' complaints about too long it took to price. (CGM 3675, 3974, 3984, 3992, 3999, 4012, 4039) (Collins ex. V).

72. Dr. Steve Mandel, then president of the Yield Book, responded to the June 2 Proposal with a counterproposal, offering to license the ACE Numbers for \$100,000 for the first year and \$50,000 for each additional year, with an option to cancel the license on 90 days notice to AAI. AAI 0060 (the "Counterproposal") (Ex. 39) ("1. Term: A five (5) year term. In each year, SAI would have an option to cancel the license on ninety (90) days notice to AAI. 2. Fees: A license fee of \$100,000 for the first year of the license and \$50,000 for each additional year. The fees proposed herein will be fixed for the term of the license.").

RESPONSE: Denied. As set forth above, Defendants' "response" to the June 2, 1998 Terms was to accept them. The supposed "counterproposal" was a ruse and not offered in good faith. Wang Dec. 41 (Collins ex. E); *see* Expert Report of Russell W. Mangum, III, AAI's damage expert, pp. 7-8 (alleged "Counterproposal" based on what Yield Book paid for other featurers, but none of these features similar to ACE in identifying interest rate paths; "Counterproposal" based on

purported cost savings, but Dr. Mandel never estimated such cost savings; “Counterproposal” based on ACE’s purported value to Yield Book only, but would have given Defendants broad rights beyond Yield Book) (**Collins ex.**).

73. Dr. Mandel based the Counterproposal on the license fees Defendants had previously paid for other software products that improve the Yield Books' efficiency. Mandel Tr. at 26: 18-27:9 (Ex. 37) ("Q: Turning back to [the counterproposal], how was the license fee of \$100,000 for the first year arrived at? A: Based on historical data points of what we had traditionally paid for other products that were integrated, such as relational database, Cybase, a relational database system that we licensed and put into Yield [Book]. There were some other graphical packages, I don't remember exactly. Over the 15 years I managed the Yield Book system we had purchased other software products and based on what we had, data, I had a ballpark data of what the software products were worth to us."); id. at 28:17-29:4 ("Q: With regard to these various other software products, did any of them provide or set forth interest rate paths? A: No, nothing similar to this. Q: Then why did you think that what you paid for other software products in different areas provided some sort of ballpark for what you might pay for an interest rate path product? A: Because to me the advantage of the system was computational efficiency rather than numbers, accuracy of numbers.").

RESPONSE: Denied. AAI repeats and incorporates by reference its response to No. 72.

74. After Defendants' counterproposal, Dr. Wang submitted various other proposals, and each demanded approximately \$1,000,000 in total, albeit in different forms of fees. Mandel Tr. at 48:25-49:2 (Ex. 37) ("A: ... we were willing to pay somewhere around \$100,000 for [the ACE Numbers] ... "); see. e.g., AAI 0827-828 (Ex. 40) ("A yearly site license fee of \$250,000; in addition to monthly fees of \$2,500 per Standard Server ... One Time Fee of Installation,

Consultation and Testing: \$100,000; in addition to \$2,500 per server and \$25,000 security software charge for each hardware platform."); SM 0017-18 (Ex. 41) ("SAI shall pay AAI yearly site license fee of \$150,000; in addition to monthly fees of \$2,500 per Standard Server ... One Time Fee of Installation, Consultation and Testing: \$100,000; in addition to \$5,000 per server and \$25,000 security software charge for each hardware platform."); SM 0019-20 (Ex. 42) ("SAI shall pay AAI yearly site license fee of \$150,000; in addition to a monthly fee of \$2,500 per Standard Server ... One Time Fee of Installation, Consultation and Testing: SAI shall pay \$100,00; in addition to \$5,000 per server and \$25,000 security software charge for each hardware platform.").

RESPONSE: Admitted, except denied that the June 2, 1998 Terms were a proposal. *See* Response to No. 65 above.

75. Dr. Wang testified that if Defendants had accepted any of AAI's post-June 2, 1998 proposals, AAI would not have entered into an agreement in accordance with those proposals. *See*, e.g., Wang Tr. at 834:8-12 (Ex. 10) ("Q: Dr. Wang, if the defendants had accepted this [September 23, 1998] proposal, would you have agreed to enter into it? Mr. Munves: Objection. A: You know, I don't think so.").

RESPONSE: Denied. Defendants' counsel asked only about the September 23, 1998 proposal, NOT about "any of AAI's post-June 2, 1998 proposals". Dr. Wang explained the reason for such an answer: "You know, knowing what I know now, that Defendants already had stolen ACE and were negotiating with bad faith." Dr. Wang's testimony was based on "now knowing Defendants breaking their license promise because they already had stolen the ACE sequences." Wang Tr. at 834:12-14). (Collins ex. W) "Apparently defendants were not negotiating in good faith, because they already had a sequence". *id* at 837:12-838:3.

76. There is no competent evidence that Defendants ever agreed to license the ACE Numbers, or promised to do so. Russell Decl. ¶¶ 11-16; Mandel Tr. at 50:15-18 (Ex. 37) ("Do you recall telling Xialou that there was some provision of his proposals that you agreed with? A: I don't remember that."); id. at 47:22-49: 10 ("Q: 'In exchange, AAI will receive 7 percent of the off-site license fee paid to Salomon Analytics by the client.' Do you recall that particular provision [of the June 2, 1998 Proposal] being discussed or considered in the negotiations with Xialou? A: That particular one, no. I recall that there was some exchange and some other ideas of how we could charge customers more, none of which came to fruition, but I don't remember this idea specifically, no. Q: What were those other provisions? A: I don't remember, I remember Xialou kept trying to come up with other ways to formulate the charges so that he can increase the revenue, his revenue, and none of the ideas were ones that I thought made sense to the Yield Book. But I don't remember the specifics. Q: Did you express that to Xialou? A: Yes: Q: How did you do so? A: I said that we're looking to pay - we were always a huge distance apart; we were willing to pay somewhere around \$100,000 for this product and I don't remember specifically what numbers he was going for, but I remember they were a lot higher and I remember that he kept saying I will come back with a different proposal, but all the proposals were formulated a little differently, but they were always a lot higher than what we were willing to pay."); id. at 92:10-20; Hayre at 242:8-243:12 (Ex. 8) ("Q: He wanted the million dollars? A: Yes. Q: Per year? A: As I recall, yes. Q: And you wanted to pay how much? .. A: I think it was like fifty thousand per year or some number like that... Q: And what did you tell him when he said he wanted a million dollars. A. We thought he was nuts. Q: Did you tell him that? A: No. We thought-I told him he was unrealistic.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied. By way of further response, AAI repeats and incorporates by reference its response to Nos. 65-75.

F. Defendants' Development And Implementation Of The Yield Book Mixed-Seed System

77. Defendants hired Dr. Mikhail Teytel in July 1998. Teytel Tr. at 353:7-9 (Ex. 43) ("Q: ... when did you start, in July - A: In July, yes."). Defendants assigned Dr. Teytel to develop a means to reduce the number of paths used in the Monte Carlo simulation component of the Yield Book valuation model without compromising the model's accuracy. _Id. at 351:23-353:19; id. at 44:24-45:3 ("Q: What was the project that is reflected in the Teytel notebook, what was your assignment? A: Well, I was requested to reduce the number of paths used in the Monte Carlo simulation."); id. at 49:8-15("Q: When you were first given the project for reducing the number of paths used in connection with the Monte Carlo simulation, were you given any information in terms of goals of accuracy of the information? A: I was supposed to maintain the accuracy of the sequence that was used at the time.").

RESPONSE: Admit that Dr. Teytel was hired in July 1998 and that he was given the assignment to reduce the number of path compared to the then current 200 path single seed production sequence but, as set forth in responses to other sections herein, he approached this task by targeting ACE. See Response to 79 herein.

78. Dr. Mikhail Teytel was assigned to work on this project. Teytel Tr. at 44:24-45:3 (Ex. 43); id. at 90:7-12.

RESPONSE: Admitted, as No. 78.

79. After several months, Dr. Teytel developed an algorithm that would enable him to select multiple seeds to be fed into the random number generator used by Defendants. Teytel at 401:10-406:12 (Ex. 43); CGM 00178-179 (Ex. 44) (document describing the mixed seed algorithm). That system resulted in Defendants changing the sequences they incorporated in the Yield Book in October 1999. Answers and Objections of Defendants to Plaintiffs Second Set of Interrogatories at 5-6 (Ex. 45) (Gauss_random_mixed.c (100 paths) was introduced to clients in October 1999).

RESPONSE: Denied, Teytel used mixed seeds to target ACE. The Algorithm did not work.

2nd Fan Decl. paras. 41 – 60.

Teytel's Development Notebook is filled with Evidence That Teytel Targeted ACE

41. The Teytel Notebook has numerous references to “ACE” in a context that indicates that Teytel had access to and possession of the ACE 64 path sequence and was using it to develop another sequence. Most glaringly, the Teytel Notebook states “ACE 64 comparison for LDS 100.” Teytel Notebook, Teytel Dep. Exhibit 1, CGM 00238 (Munves Decl. P). Teytel denies that he had the ACE sequence, claiming that all he had were the prices calculated when defendants tested the ACE sequences. However, that is neither what this quoted language suggests on its face nor what the rest of the Notebook suggests. There is no mention anywhere in the Notebook of Teytel comparing the ACE calculated prices with the prices derived from Teytel's alleged 100 path mixed seed MBS.
42. There is additional Notebook evidence that Teytel actual possession of the ACE sequence. When Teytel was testing “his” mixed seed sequences, he referred to the program which included the sequence being used to price the test portfolio of CMO securities as “cmoopt”.⁷ There are two initial instances of this in Teytel Notebook (Munves Decl. P). The first was when he was testing his 64 path mixed-seed sequence (CGM 00223) and the second when he was testing his 100 path mixed seed sequence which he referred to as “LDS 100” (CGM 00234) Then, following the page which states “ACE 64 comparison for LDS 100” (CGM 00238), on the first line on the very next page (CGM 00239) under the title “LDS 100”, Teytel again refers to “cmoopt”. This reference to “cmoopt” clearly is to the program using his 100 path mixed seed sequence being used to price test securities. On the fourth line of that page (CGM 00239) under the LDS 100 title, Teytel refers to “cmoopt.simple”, which he admitted⁸ referred to the program for pricing securities with the Teytel referred to his sequences in the Notebook as “lds” which stands for “low discrepancy sequence.” But in the field, this term refers to sequences that are calculated from mathematical formulae rather than being selected using arbitrary seed selection and a pseudo random number generator as Teytel claims he used. LDS is an inappropriate description of Teytel's mixed-seed methodology implemented using the pseudo random number generator to test arbitrary seeds. Not having any experience in the field, he did not know this.

then current 200 path single seed sequence that Teytel was trying to improve upon when he was told to develop a shorter sequence “fast”. Tellingly, on the third line of that very same page, Teytel refers to “cmoopt.ace” which, following his own prior convention in the Notebook, this logically refers to an executable program using the ACE sequence to price the test portfolio of securities. The following page (CGM 00240) also is consistent with the use of the ACE sequence to price securities. It shows the output pricing of both cmoopt and ACE. The ACE output files are listed under the heading “Project ACE”.

43. Another indication of copying of ACE 64 in the Teytel Notebook is found on CGM 00238 (Teytel Notebook)(Munves Decl. P). Teytel refers to the source code “-gauss_random with fixed long seeding” as being one of the programs he used to conduct the “ACE64 comparison for lds 100”.⁸ Previously, when Robert Russell had been testing the ACE sequences for defendants, he had used a modified version of the gauss_random.c program. Robert Russell Dep. 479:19-480:6 (Munves Decl. O). Teytel’s Notebook reference here to “gauss_random” clearly does not refer to the gauss_random.c program used to generate the 200 path single seed sequence, because that sequence was not being tested here. Teytel’s own notation states that the comparison here was for a test between the “ACE64” and Teytel’s “lds 100” mixed seed sequence. There was simply no reason to generate the old single seed 200 path sequence for this comparison between ACE64 sequence and the Teytel 100 path mixed seed sequence (“lds 100”). Therefore, the reference to “gauss_random” here must be a reference to the modified version of the gauss_random.c program used by Robert Russell, who both tested ACE and supervised Teytel, to read in the ACE sequences. ⁹ http://en.wikipedia.org/wiki/Short_integer, http://en.wikipedia.org/wiki/Long_integer

¹⁰ The following comes from gauss_random_mixed.c dated on 99-11-01 provided by defendants on 8-17-07 (all seeds listed are short integers):

```
“seeds[ 0]= 1324;
seeds[20]= 21425;
seeds[30]= 22803;
seeds[40]= 23609;
seeds[50]= 24535;
seeds[60]= 25803;
seeds[70]= 26008;
seeds[80]= 27662;”
```

¹¹ The following comes from all versions of gauss.rndom.c 94-10-1 until 4-27-2006 provided by Defendants: (23271753 is a long integer):

```
“ else seed0=23271753;
srand48(seed0);”
```

This is crystal clear evidence that Teytel had possession of the ACE64 sequence

44. Further, as noted above, immediately after the reference to “gauss_random” is the reference to “with fixed long seeding” -- so the entry on CGM 00238 reads “gauss_random with fixed long seeding”. In C code terminology, the computer language “gauss_random was written it, the default mixed seeds or “seeding” used by defendants to seed their pseudo random number generator to produce LDS100 are all “short integers.” “Short integers” are integers having a maximum value of 32,767⁹ (see the numbers used as seeds in gauss_random_mixed.c found in 1999-11-1 10). In contrast, the default seed in the gauss_random.c program used to generate the old 200 path single seed sequence is a fixed long integer - 23271753. ¹¹ Thus, the “gauss_random” program referred to when Teytel referenced “gauss_random with fixed long

seeding” cannot be any version of gauss_random.c that might have been modified to test this 100 path mixed seed sequence or Teytel would have referred to it as “gauss_random with mixed short seeding” rather than “gauss_random with fixed long seeding”. This further supports the conclusion that the entry on CGM 00238 - “gauss_random with fixed long seeding” - is a reference to the gauss_random.c program modified by Robert Russell to read in the ACE sequences during testing.

45. At his first deposition, when Teytel was asked to read from his Notebook the words “with fixed long seeding,” he deliberately skipped the word “seeding”, and misread the word “long” to be “bug”. He vehemently claimed that the word “long” was “bug” and would not admit that the following word, “seeding,” was understandable. But a glance at the page, CGM 00238, shows that he was merely trying to deny the obvious. The phrase “fixed bug seeding” would have no meaning in normal computer parlance. Seeds are not programs. They are merely sets of numbers and therefore cannot have bugs. Computer software programmers, including Teytel, would never use the phrase “with fixed bug seeding”. In short, Teytel’s Notebook Reference to “-gauss_random with fixed long seeding” is a reference to a program designed to use the ACE sequences to price securities. Defendants plainly had ACE in their possession at the time of Teytel’s work, which was long after Defendants’ testing of ACE pursuant to the Non Disclosure Agreement had come to an end, and Teytel was using ACE in his development work.

The Change in Implementation of the Two Factor Model Indicates the Mixed-Seeds were used to Target ACE

46. Like the prior 200 path single seed sequence, Teytel’s 100 path mixed-seed sequence had two numbers at each time step as in a Two Factor Model. In a proper implementation of the Two-Factor Model, the two numbers are completely independent of each other. However, Defendants’ 200 path single seed sequence did not properly implement this principle. It used the same number, or the same number with a different sign (plus or minus), at each time step. In effect, while Defendants gave the appearance of following the Two Factor Model in their 200 path single seed sequence, which their Term Structure Model paper teaches is better, here Defendants implemented the two factors in a way that was more in of the spirit of the One Factor Model. Term Structure Model, p. AAI 0691-0693 (Munves Decl. C). ACE followed the true Two Factor Model. However, Teytel’s 100 and 200 path mixed-seed sequence followed the true Two Factor Model. This switch in implementation is just what one would expect were the inexperienced Teytel targeting ACE to select his so-called mixed seed sequences.

Defendants’ alleged Sequence could have not been Possibly Developed within Months if Dr. Teytel followed his Algorithm and Procedure.

47. In allegedly discovering “his” 64 path sequence, Teytel claimed to have undertaken testing in ten stages to find the “best” seed for each of the ten seed positions allegedly required for the mixed seed sequence. Dr. Teytel claims that he tested each candidate seed by calculating the price of a portfolio of about 100 CMOs, using a sequence generated by the candidate seed, against the benchmark price for the portfolio. Teytel testified that he calculated the benchmark portfolio pricing by using at least 20,000 different seeds. To select a different seed for each of the ten stages of the sequence, Teytel used a different interest rate assumption (OAS or Option Adjusted Spread) at each stage according to the Algorithm, See CGM 178, para. “c)” and “d)” (Munves Decl. Q). Thus, for purposes of calculating the benchmark, Teytel must have used the

20,000 test seeds ten times each to account for the ten different stages. This is equivalent to pricing the 100 CMOs with 200,000 seeds.

48. After he calculated the benchmark, Teytel claims he proceeded to test seeds for each of the ten seed positions. With respect to the first seed position, Teytel testified that he tested “between some small number, maybe a thousand, up to 99,000 seeds.” In addition, Teytel tested 145,000 seeds by pricing a list of 100 CMOs for the 2nd through 10th time step. This is reflected in Teytel’s Notebook (on pages CGM 209-232, Teytel Deposition Exhibit 1 (Munves Decl. P)).

49. Most importantly, Dr. Teytel testified that testing took approximately 2 hours per seed. Thus, calculating the benchmark prices of 100 CMOs alone in paragraph 47 would take him 400,000 hours or 45.66 years, even before he started to select seeds.

50. As noted, Teytel testified that for the first seed, he tested between 1,000 and 99,000 seeds. I assumed he used 45,000 seeds, less than half of the average. 45,000 seeds at 2 hours per¹² Teytel testified all the seeds took the same time to test and that testing took “within two hours” Teytel Dep. 551:12-552:8 (Munves Decl. _)

¹³ Teytel Dep. 284:23-285:14 (Munves Decl. _)

seed would have taken Teytel 10.27 years of testing to find just the first seed.¹²

51. In addition, I have calculated the number of seeds identified as being tested by Teytel for selecting seeds in the remaining 9 stages on Notebook pages 209-232, and they are more than 145,000 seeds. 145,000 seeds at 2 hours per seed would have taken Teytel 33.10 years of testing to price the list of 100 securities with each of these seeds so that he could compare the prices generated against the benchmark

52. Thus, to do all this testing, using Teytel’s own numbers, it would have taken him more than 89 years to price the list of test securities with all the seeds described above, a total 390,000 seeds in all, just to develop the 64 path sequence. Yet he claims that the 64 path sequence was developed in a matter of months. This is impossible and leads to the conclusion that Teytel is not telling the truth about what he did to test the seeds during development of his 64 path sequence.

53. The same calculation as to the number of seeds used cannot be made with respect to the 100 and 200 path mixed seed sequences, because, unlike with the 64 path sequence, there was no identification of any significant number seeds tested. However, if Teytel had followed the same Algorithm and procedure for selecting seeds for the 100 and 200 path mixed seed sequences as he did for the 64 path sequence, it would have taken him many, many years.

54. The 100 path mixed seed sequence was alleged to have been completed in April 1999, apparently only a few months after Teytel started work on this sequence in February 1999, and less than a year after he started working for defendants. The 200 path mixed seed sequence was alleged to have been completed by September of 2000, less than a year and a half after adoption of the 100 path sequence. These sequences could not have been created following the Algorithm and procedure that Teytel testified he followed.

55. Like any scientific discoveries or product developments, even with creative ideas and talented developers, much trial and error is involved. Improvements come from these trials and errors.

Even if Dr. Teytel was able to improve his computation speed by using up to the two dozen computers he has claimed might have been available to him,¹³ since the selection process is so intensive and human-machine interactions are time consuming, he could not have performed the calculations non-stop on all 24 computers as it would not have allowed him to make any mistakes, try different declining OAS schemes or different time bands, test different ranges of seeds, and revise his algorithm and idea. My own experience, as a supervisor of tens of talented Ph.D. students and many academic collaborators, the mixed seeds could have not been selected following Dr. Teytel's algorithm because selecting each seed would have simply taken him too long even if the Algorithm had any mathematical validity. But, as discussed below, the Algorithm is nonsensical.

Mixed-Seed Algorithm Does Not Make Sense and Targets ACE

56. Few mathematical scientists would call Teytel's document entitled "Mixed Seed Algorithm" an algorithm or a report. Exhibit 4, CGM 178-9 of Teytel's deposition (Munves Decl. Q). It is like a half-baked proposal or a sketch of the idea. Look at the algorithm: None of the parameters are even specified.

- **Run a large number of seeds and select the best according to one of the measures (corresponding to large OAS). This determines a seed (SEED1) with the best spacial distribution for the first few dimensions.**
- **Make a large number of runs each with SEED1 at which point the seed is reset. Select SEED2 such that the combination of SEED1 (0-T1) and Seed2(T1-Tend) provides the best accuracy according to may be another measure (corresponding to a slightly smaller oas). This seed combination provides the best special distribution in a larger number of dimensions.**
- **Continue this process until the best seed combination is found: (SEED1, 0), (SEED2, T2), ..., (SEEDn, Tn-1). This seed combination provides the best special distribution in all dimensions.**
- **Few finalists are thoroughly tested on a vary large number of securities. To select a winner.**

57. The procedure of selecting seeds is nonsensical. It requires generating MBS prices using the time steps for 30 years and based on that, selecting a seed for only one or two years' worth of time steps while ignoring the other 28-29 years of time steps. The deficiency of the Algorithm is that seeds are arbitrarily selected based on more time steps than each seed is actually being used for, except for the last seed. As a result, there is no coordination of the different time steps that need to be coordinated to create the entire interest rate path for the 30 years of mortgages.

58. The analogue is to draw ten different pieces of pictures independently without looking at what the other parts are and their scales (*e.g.*, the first part can be a huge man face without a neck, the second part can be an small creek; while the third part can be a tiny lady's body without a neck; and so on) and then put the different parts together to form a picture. The chance that such a random drawing can result in a cogent picture is non-existent. Scientifically, I even

drew graphs of OAS effects to demonstrate that the effect on MBS pricing caused by the declining OAS procedure is too small to make any practical difference in selecting random seeds in this manner.

59. The only explanation of what Dr. Teytel could have hoped to accomplish a mixed-seed selection process that would otherwise take him tens of years is that rather than following the nonsensical Algorithm, Teytel was using the mixed-seed method to target ACE. In contrast to the two hours for each of the 390,000 seeds Teytel would have had to devote for these alleged tests, it would have taken only seconds to compare the distribution of the sequence generated by each of the seeds to the distribution of ACE 64, or to compare the distribution of the future interest rate paths generated by the seeds with the distribution of the future interest rate paths generated by ACE 64. This was the only type of comparison that was feasible in the months that Teytel allegedly tested his 390,000 seeds. Thus, Teytel would have no problem running through all the hundreds of thousands of seeds listed in the Notebook for the purpose of approximating ACE.
60. My own correlation analysis provides stark evidence that Teytel was using the mixed seed method to target ACE. The correlation analysis on the sequence generated by Dr. Teytel's "best" seed 13812 for the first time band shows unusual correlation between that sequence and the ACE 64 sequence, both vertically (along time steps) or horizontally (across 64 paths) or both. The analysis has been provided in my expert report and elaborated during my second day deposition. It will be explained further below.

80. The mixed-seed system functions by combining eight smaller sequences of numbers, each of which is generated from a different seed. CGM 00176-177 (two disks containing a copy of the RCS Directory) (Ex. 46); Teytel Tr. at 367:19-21 (Ex. 43) ("Q: ... How many numbers are used your mixed seed method? A: Less than ten."); CGM 00178-179 (Ex. 44) ("Continue this process until the best seed combination is found ... "). Each of those smaller segments covers a different time period and, together, form a sequence that is the same length as the single seed sequence previously used by Defendants. Teytel Tr. at 409: 10-411 :03 (Ex. 43).

RESPONSE: Admit that Defendants used multiple seeds but they used them to target ace. See response to section 79 above.

81. Dr. Teytel's method for selecting the seeds for the mixed-seed system, as reflected in the document he wrote titled "Mixed Seed Algorithm," involves a manipulation of the value of the Option Adjusted Spread ("OAS") to emphasize different the time intervals associated with

each seed. CGM 00178-179 (Ex. 44) (noting that the mixed-seed algorithm is based upon the principle that "different [OAS]'s put different weights to different time intervals ... "); Teytel Tr. 476:6-20 (Ex. 43) ("Q: How did you determine what OAS you would use to select seed 1, seed 2, seed 3, seed 4, seed 5? A: Judgment call. Q: Was there any pattern to it or just picked them out of thin air? .. A: It started I believe at large positive numbers and then monotonically decreased them ... A: It means that it's ever-decreasing.").

RESPONSE: Denied, Dr. Teytel's "Mixed Seed Algorithm" did not work and was concocted to cover up Teytel's use of multiple seeds to target ace. See response to 79.

82. AAI's expert witness, Dr. Jianqing Fan, agreed during his deposition that manipulating the OAS would emphasize different time intervals. Fan Tr. at 313:12-15 (Ex. 47) ("Q: Is it correct that [Dr. Fan's own graph of OAS effects] demonstrates that different OASs put different weights on different time intervals? A: That's correct.").

RESPONSE: Admit that Dr. Fan said that but it is taken out of context. Dr. Fan also said that this approach would have no appreciable effect. See response to section 79 above and para.58 of fan 2nd Fan Decl.

58. The analogue is to draw ten different pieces of pictures independently without looking at what the other parts are and their scales (*e.g.*, the first part can be a huge man face without a neck, the second part can be an small creek; while the third part can be a tiny lady's body without a neck; and so on) and then put the different parts together to form a picture. The chance that such a random drawing can result in a cogent picture is non-existent. Scientifically, I even drew graphs of OAS effects to demonstrate that the effect on MBS pricing caused by the declining OAS procedure is too small to make any practical difference in selecting random seeds in this manner.

83. Using this methodology for selecting seeds, Dr. Teytel first attempted to develop a 64 path mixed-seed sequence; however, when he tested that sequence, he concluded that it was inferior to the production sequence Defendants were using at that time, and therefore he turned to

developing a 100 path sequence. Teytel Tr. at 121: 11-122: 10 (Ex. 43) ("Q: Did you ever work on trying to create a 64-path set of sequences? A: Yes. Q: Were you successful. A: No. Q: Why not? .. A: I'm not sure. Q: Can you give us any explanation for why you believe you were unsuccessful? A: My method didn't work that well. Q: When you say it didn't work well, what do you mean? A: The results, the test results that have been produced suggested that the 64-path sequence that I created was inferior to the production sequence. Q: From an accuracy standpoint? A: That is accurate. Q: So it is true that you came up with and developed a 64-path sequencing system but you found it to be inferior after you tested it, correct? A: Inferior to the production sequence, yes.").

RESPONSE: Denied. Dr. Teytel's "Mixed Seed Algorithm" did not work and was concocted to cover up Teytel's use of multiple seeds to target ace. See response to 79. Admit that Teytel claims that the 64 path sequence resulting from his targeting of ACE 64 was inferior to the 200 path single seed production sequence but Defendants never produced that sequence or the selection code and testing system to support Dr. Teytel's bare claims.

84. Defendants never used the 64 path sequence developed by Dr. Teytel. Teytel Tr. at 371:08-13 (Ex. 43) ("Q: What file would I look in to determine how many seeds were used to create the 64-path seed sequence? .. A: That file, that sequence has never been put into production."); id. at 566:21-567:4 ("Q: Do you know if the 64-path sequence that you had developed is reflected anywhere in the RCS directory? A: Not to my knowledge. Q: Why not? A: It, you only put things into RCS that's designated to become production. Things didn't work out, did not get put into RCS."); CGM0176-0177 (Ex. 46) (two disks containing the RCS Directory as described below); Decl. of B. Radak ("Radak Decl.") ¶ 4 (Ex. 63); CGM0495-0496 (disks containing Defendants' sequences as described below).

RESPONSE: Denied. See response to 83.

85. After Dr. Teytel had developed a 100 path mixed-seed sequence, he attempted to compare a report of the accuracy of that sequence to a report of the accuracy of the ACE Numbers that had been generated when Defendants had tested the ACE Numbers and the 200 single seed sequence that was used in the Yield Book production code at that time. Teytel Tr. at 183:18-184:5 (Ex. 43) ("Q: Did you ever use, other than just read as background, any of the testing results that Citigroup did of Dr. Wang's ACE program in connection with any work you did as reflected in the Teytel notebook? A: I believe that once the 100-path mixed seed sequence has been generated, I attempted to compare the accuracy of my mixed seed sequence versus the accuracy of the production sequence and versus the accuracy of the ACE 64 sequence. Q: Any other way other than that? A: That's the only way, yes.").

RESPONSE: Denied. See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60.

86. Dr. Teytel made that comparison only to learn how the performance of the new sequence he had developed compared to the performance of the ACE Numbers. Teytel Tr. at 185:4-10 (Ex. 43) ("A: [I]t was a vanity thing. I wanted to compare the accuracy of my sequence versus an accuracy of a sequence that's available out there. Q: Other than as a vanity thing, was there any other reason? A: No.").

RESPONSE: Denied. See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60.

87. At no time did Dr. Teytel have access to the ACE Numbers themselves. Teytel Tr. at 317:7-9 (Ex. 43) ("Q: Have you ever had access to the ACE sequence? A: No."); Russell Decl. ¶ 10.

RESPONSE: Denied. See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60. 88. Dr. Teytel did not reverse engineer any information based upon the results of testing the ACE Numbers. Teytel Tr. at 317:18-25 (Ex. 43) ("Q: Were you ever instructed by anyone to reverse engineer the ACE software? A: No. Q: Did you ever attempt to do so? A: No."). The information Dr. Teytel obtained about the test results of the ACE Numbers was not necessary for him to complete his work. Id. at 318:15-18 ("Q: Was the information that Bob [Russell] provided to you concerning the ACE test results necessary for you to complete your work? A: No."); id. at 320:4-8 ("Q: Would it have been possible to compare anything other than the accuracy of ACE to the accuracy of the Yield Book sequences? ... A: No.)".

88. Dr. Teytel did not reverse engineer any information based upon the results of testing the ACE Numbers. Teytel Tr. at 317:18-25 (Ex. 43) ("Q: Were you ever instructed by anyone to reverse engineer the ACE software? A: No. Q: Did you ever attempt to do so? A: No."). The information Dr. Teytel obtained about the test results of the ACE Numbers was not necessary for him to complete his work. Id. at 318:15-18 ("Q: Was the information that Bob [Russell] provided to you concerning the ACE test results necessary for you to complete your work? A: No."); id. at 320:4-8 ("Q: Would it have been possible to compare anything other than the accuracy of ACE to the accuracy of the Yield Book sequences? ... A: No.)".

RESPONSE: Denied. See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60. 89. Prior to October 1999, Defendants used a 200 path single-seed

sequence in the Yield Book. Answers and Objections of Defendants to Plaintiff's Second Set of Interrogatories at 6 (Ex. 45) (Gauss_random.c was introduced to clients in 1994.).

89. Prior to October 1999, Defendants used a 200 path single-seed sequence in the Yield Book. Answers and Objections of Defendants to Plaintiff's Second Set of Interrogatories at 6 (Ex. 45) (Gauss_random.c was introduced to clients in 1994.).

RESPONSE: Denied, Defendants were using the stolen ace for their own account. See Response to 79. Defendants had ACE and were using it after they stole it in June 1998. 2nd Fan Decl. paras. 41 – 60.

90. Defendants implemented the 100 path mixed-seed system that Dr. Teytel had developed in approximately October 1999, and it was used in the Yield Book until approximately February 2001. Answers and Objections of Defendants to Plaintiffs Second Set of Interrogatories at 5-6 (Ex. 45) (Gauss_random_mixed.c (100 paths) was introduced to clients in October 1999 and was replaced by gauss_random_mixed.c (200 paths) for clients in February 2001.).

RESPONSE: denied to the extent it is contended that the 100 path mixed seed sequence was not derived from ACE in some fashion . See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60. Moreover, according to Defendants' Second Interrogatories, their own traders were allegedly provided with it presumably through The Yield Book in May 1999 (Declaration of Russell D. Munves dated April 21, 2008, ("Munves Decl.") H, Response to Interrogatory 4) The sequence provided to their traders likely was a combination of the ACE sequences themselves or a more accurate derivation of ACE than provided to Defendants' third party customers. Also, Plaintiff objects to "mixed-seed system" as ambiguous. Defendants used one or more seed fed into publically available pseudo random number generator to generate a

sequence used to take market volatility information and modify the Treasury Yield Curve to generate a set of interest rate paths. They used the this system with mixed-seeds to target ACE.

RESPONSE: Denied to the extent it is contended that the 100 path mixed seed sequence was not derived from ACE in some fashion . See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60. Moreover, according to Defendants’ Second Interrogatories, their own traders were allegedly provided with it presumably through The Yield Book in May 1999 (Declaration of Russell D. Munves dated April 21, 2008, (“Munves Decl.”) H, Response to Interrogatory 4) The sequence provided to their traders likely was a combination of the ACE sequences themselves or a more accurate derivation of ACE than provided to Defendants’ third party customers. Also, Plaintiff objects to “mixed-seed system” as ambiguous. Defendants used one or more seed fed into publically available pseudo random number generator to generate a sequence used to take market volatility information and modify the Treasury Yield Curve to generate a set of interest rate paths. They used the this system with mixed-seeds to target ACE.

91. Defendants determined that the 100 path mixed-seed system was not providing acceptably accurate results. Teytel at 92:14-17 (Ex. 43) (“Q: Why did Citigroup stop using the 100-path sequencing that you worked on? A: It didn't provide the sufficient accuracy.”); Rule 30(b)(6) Deposition of L. Hayre at 19:2-20:6 (Ex. 48).

RESPONSE: Admit that that is defendants claim but deny on the ground that Plaintiff has not been permitted discovery into traders’ usage of the alleged 100 path or any sequence to determine the truth of the claim and Defendants have withheld the 100 path sequence selection code and code containing the test system for this sequence, the test code and inputs and outputs, used to test it so that Plaintiff can attempt to replicate Defendants’ alleged results. Plaintiff’s objections to the refusal to compel production of the selection and test code is pending.

92. Because the 100 path mixed-seed system was not providing accurate results, Defendants implemented a 200 path mixed-seed system in about February 2001, and they have continued to use that system in the Yield Book ever since. Teytel Tr. at 92:18-93:8 (Ex. 43) ("Q: And once [Citigroup] stopped using the 100-path, did it use a 200-path? A: Yes. Q: What was the difference, if any, between the 200-path that Citigroup was using after it stopped using the 100-path, as compared to the production sequences they were using when you started at Citigroup? A: It's a different sequence. Q: It was a 200-path sequence that you came up with? A: Yes. Q: Is that being used today, as far as you know? A: Yes."); Answers and Objections of Defendants to Plaintiffs Second Set of Interrogatories at 5-6 (Ex. 45) (Gauss_random_mixed.c (200 paths) is presently used by clients.); Rule 30(b)(6) Deposition of L. Hayre at 62: 17-20 (Ex. 48) ("Q: And the 200-path mixed-seed sequence was released traders and clients as of February 2001. A: Yes.").

RESPONSE: See Response to 91. The use of mixed seeds was to target ACE. See Response to 79. Teytel used mixed seeds to target ACE. 2nd Fan Decl. paras. 41 – 60.

G. AAI's Six-Year Delay In Filing Suit

93. AAI alleges that during Defendants' final test of the ACE Numbers in early June 1998, Dr. Wang became suspicious that Defendants were misappropriating the ACE Numbers. Complaint ¶¶ 64-66 (Ex. 1) (Dr. Wang was "worried that Defendants were somehow capturing the ACE sequence" during the fourth test.).

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied Defendants falsely reassured AAI. Dr. Wang questioned Mr. Russell

about the file accumulation. Mr. Russell assured Dr. Wang that no such wrongdoing was taking place. Mr. Russell calmed any concerns Dr. Wang may have had, telling Dr. Wang that he “could depend on the NDA” to protect the ACE trade secrets. Dr. Wang could have no suspicion after Mr. Russell’s assurance.

At the end of 1998, Dr. Wang obtained information from Dr. Kuan that led him to be concerned that Defendants had stolen ACE. However, at this time Dr. Wang had no information or reason to suspect that Defendants were using ACE. In early January 1999, concerned about what Dr. Kuan had imparted to him, Dr. Wang warned Dr. Mandel not to use ACE without a license. Dr. Mandel consented, assuring Dr. Wang that Defendants would not do so. Moreover, evidently consistent with Dr. Mandel’s promises, in January 1999 The Yield Book reversed its previously announced roll out of a 64 path sequence. Thereafter, Dr. Wang met with Dr. Hayre who also assured Dr. Wang that Defendants did not use ACE. Dr. Hayre also said that Defendants had hired a researcher (Dr. Teytel, I later learned) who would take a long time to “check” 10,000 or 100,000 seeds and might take ten years to find a workable sequence.

Thereafter, by letter of November 1, 1999, Mr. Goddard assured Dr. Wang, through Dr. Wang’s counsel, that once a non disclosure agreement was in place, “SSB will provide Advanced Analytics internal confidential materials that should allay any concern that SSB has ‘reverse engineered’ his ACE software.” (Ex. 50) Dr. Wang was reassured by Mr. Goddard’s letter. Dr. Wang was also assured by Mr. Russell and Dr. Kuan, both of whom denied that Defendants used or even stole ACE. (Dr. Kuan thus recanted his earlier suggestion that Defendants might have stolen ACE.) Dr. Wang never obtained hard evidence that Defendants had in fact stolen ACE and used it until after he filed this lawsuit.

94. AAI waited almost six years from the date of Dr. Wang's first suspicions that Defendants were misappropriating the ACE Numbers before filing this lawsuit in May 2004. Complaint ¶¶ 64-66 (Ex. 1) (filed May 7, 2004).

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied AAI repeats and incorporates by reference its response to No. 93.

95. Dr. Wang first accused Defendants of having stolen the ACE Numbers in September 1999. CGM 00015-16 (Ex. 49) (September 1, 1999 Letter from C. Potamianos to L. Hayre, "What truly disturbs us from a legal standpoint is that our client's investigation revealed that ACE may actually have been reserve engineered by certain employee(s) of your firm who were involved with the testing.").

RESPONSE: AAI repeats and incorporates by reference its objection to No. 13. By way of further response, denied AAI repeats and incorporates by reference its response to No. 93.

96. Defendants consistently denied these accusations. See. e.g., AAI 0045-50 (Ex. 50) (November 1, 1999 Letter from J. Goddard to C. Potamianos offering to allow AAI access to Yield Book code to allay any concern of Dr. Wang that the ACE Numbers were misappropriated).

RESPONSE: Admitted.

97. Dr. Wang tape recorded four separate conversations with three of Defendants' employees, without their knowledge or consent. See. e.g., Wang Tr. at 479: 19-480:7 (Ex. 10) (Did you tell [Mr. Kuang] in September of 1999 that you were recording his conversation? A: I did not... Q: Did you tell him that you were recording his conversation in October 2000? A: I did not."); id. at 487:7-10 ("Q: You also made a tape recording of a conversation with Robert Russell

and yourself? A: That's correct."); id. at 489:20-22 ("Q: Did you advise Mr. Russell that you were recording his conversation? A: I did not.").

RESPONSE: Admitted AAI did so, exercising due diligence, to investigate Defendants' potential fraudulent concealment of the their misappropriation. AAI did so on the advice of counsel.

98. Sometime in late 1999 or early 2000, Dr. Wang requested a meeting with Dr. Hayre. Hayre Tr. 258:3-12 (Ex. 8) ("Q: So Dr. Wang called me up and said he had - - and I didn't want to meet him to, you know, hear another sales pitch from him about how we could make a trillion dollars in trading mortgage securities using his sequence. So you know, he called me up and said that he had some very important information that he had to tell me about. And so I said fine, I agreed to meet with him. He showed up not by himself but with another gentleman."). Dr. Wang came to Defendants' offices with a hidden recording device and, unbeknownst to Dr. Hayre, recorded their conversation. Wang Tr. at 484:7-486:13 (Ex. 10) ("Q: You then in ... February of 1999 you made a recording of a conversation between Lakhbir Hayre, yourself and Lingfeng Song; is that correct? A: Yes. Q: How did you make that recording, Dr. Wang? It's just a tape recorder. ... Q: [It was a] [f]ace-to-face meeting with Lakhbir Hayre? A: Yes ... Q: Did you tell Mr. Hayre that you were recording that conversation in February of 1999 between the three of you? A: No, I did not... Q: Did you carry the recorder in with you to the meeting? A: Yes. Q: Where was the meeting? ... A: In World Trade Center 7. Q: Was this at Salomon Brothers' office? A: Yes? Q: Describe for me where on your person you had the recorder when you went to this meeting in February of 1999 with Mr. Hayre and Mr. Song? A: I have the tape recorder just I put it in my pocket. Q: In your coat pocket? A: Yes.").

RESPONSE: Admitted, except Dr. Wang requested this meeting in January 1999.

99. Defendants' employees advised Dr. Wang during these tape recorded conversations that Defendants had decided not to license the ACE Numbers, and had not stolen them. See, e.g., Kuang Tr. at 103:23-104:4 (Ex. 51) ("In fact, didn't you tell Dr. Wang that Mr. Herman told you that Salomon already had the sequences in three separate segments or paths? ... A: I never told Dr. Wang this.").

RESPONSE: Admitted.

100. Although Dr. Wang made these tape recordings in 1999 and 2000, AAI did not produce them to Defendants, despite discovery requests that sought their production, until mid-2007. May 8, 2007 letter from A. Loewinsohn to C. Moore (Ex. 52) (producing AAI 3095); May 24, 2007 letter from C. Moore to A. Loewinsohn (Ex. 53) (requesting information relating to recorded conversations on CD bates-stamped AAI 3095).

RESPONSE: Denied. As soon as Dr. Wang received the document production requests from Defendants in this litigation, he made digital copies of the tape recordings he made and sent them to his previous counsel to be produced to defendants in early 2005. Dr. Wang has also twice tried to make better quality digital copies, and sent these to AAI's previous counsel immediately, in October 2005, and again in May 2007, for production to Defendants.

101. On September 1, 1999 AAI, through its first counsel in this matter, threatened to sue Defendants based on the allegation that defendants had misappropriated the ACE Numbers, and also threatened to seek a criminal prosecution of Defendants. CGM 00015-16 (Ex. 49) (September 1, 1999 Letter from C. Potamianos to L. Hayre, "What truly disturbs us from a legal standpoint is that our client's investigation revealed that ACE may actually have been reserve engineered by certain employee(s) of your firm who were involved with the testing."). Despite

its allegations, AAI continued to attempt to license the ACE Numbers. Id. ("During our ongoing investigation our client is still willing to proceed with good faith negotiations. ").

RESPONSE: Admitted.

102. In response, Defendants offered to allow AAI to review the Yield Book code to determine that its accusations were meritless. AAI 0045-50 (Ex. 50) (November 1, 1999 Letter from J. Goddard to C. Potamianos, "Enclosed herein please find a proposed draft of a Non-Disclosure Agreement for your review. As we have discussed, once an acceptable Agreement has been executed by the parties, Salomon Smith Barney ('SSB') will provide Advanced Analytics with internal confidential material that should allay any concern of Dr. Wang that SSB 'reverse engineered' his ACE software.").

RESPONSE: Admitted.

103. Over two years later, AAI, through its second counsel, threatened Defendants again, this time delivering a draft complaint and offering to disclose evidence of Defendants' alleged wrongdoing. See CGM 00012-13 (Ex. 54) (February 14, 2002 Letter from J. Cambria to J. Goddard, "At your client's request, we have prepared a complaint, a copy of which is enclosed for your review, and we are prepared to file the same promptly."); CGM 00014 (Ex. 55) (February 20, 2002 Letter from J. Cambria to J. Goddard, "When we (presumably) get down to discussing specifics, there may be additional documents and other information that we would be willing to provide in order to facilitate a resolution short of actual litigation."). In response, Defendants renewed their previous offer to allow AAI to review Defendants' Yield Book code, which AAI declined.

RESPONSE: Admitted.

104. Two years later, through its third set of lawyers - weeks before the six year anniversary of Defendants' final testing of the ACE Numbers - AAI filed this lawsuit. Compl. (filed May 4, 2007) (Ex. 1); CGM 00069-95 (Ex. 38) (testing results and summary of same dated June 26, 1998).

RESPONSE: Admitted.

105. On February 13, 2007, AAI's third set of lawyers was granted permission to withdraw based upon irreconcilable differences with AAI. Memorandum and Order dated February 13, 2007 (Ex. 56).

RESPONSE: Admitted.

106. AAI's fourth set of lawyers appeared in this matter, and then withdrew a few months later. Notice of Appearance dated March 15, 2007 (Ex. 57); Order dated August 10, 2007 (Ex. 58).

RESPONSE: Admitted.

107. AAI is now represented by its fifth and sixth set of lawyers.

RESPONSE: Admitted.

H. The Fan Report

108. On May 26, 2005, Defendants produced to AAI a copy of their revision control system ("RCS directory"), which includes Defendant's production code for generating sequences for the period the entire relevant period. CGM 00176-177 (Ex. 46); Rule 30(b)(6) Deposition of R. Russell at 60:6-62:2 (Ex. 59); May 26, 2005 Letter from C. Moore to S. Matt (Ex. 60) (enclosing two disks labeled CGM 00176 and CGM 00177). The RCS directory also reflects every change made to Defendants' production code during that period. Id. From the RSC Directory, every sequence Defendants could ever have used in the Yield Book both prior to and

after Defendants' testing of the ACE Numbers can be generated. Declaration of Dr. Nathaniel Polish, dated February 28, 2005, ¶¶ 2-4 (Ex. 61) ("2. I have reviewed the revision control system ('RCS') that defendants produced to plaintiff, which bears the bates stamp CGM 00176-177. 3. After reviewing the RCS files produced by defendants, I was able to determine, for any given day during the relevant period, (a) the seeds used in defendants' production code; (b) the random-number generator used in defendants' production code; (c) the sequence of random numbers generated as a result of inputting the seeds into the random-number generator, the so-called 'YB' or 'Yield Book Numbers'; and (d) the number of paths used by defendants' production code.").

RESPONSE: Denied: Defendants claim that this is true but there is no independently verifiable evidence supporting it. Defendants have withheld the 100 path sequence selection code and code containing the test system for this sequence, the test code and inputs and outputs, used to test it so that Plaintiff can attempt to replicate Defendants' alleged results. Plaintiff's objections to the refusal to compel production of the selection and test code is pending. See Response to 79 above, 2nd Fan Declaration makes clear that there is a mountain of evidence demonstrating that this claim is untrue Defendants; and that have withheld key evidence including the fact that Dr. Polish was apparently testing a different 100 path mixed seed sequence than the one provided to Plaintiff in discovery:

119. There is a mountain of evidence that Defendants stole the ACE sequences and were intent on creating derivative sequences by targeting them:

- a. Defendants tested ACE extensively. They tested their 200 path single seed sequence against ACE 64 and saw that their sequence, more than three times slower, was much less accurate than ACE 64.
- b. After they completed testing ACE, Defendants almost immediately thereafter hired Mikhail Teytel and told him to reduce the number of paths "fast". Teytel had no appropriate mathematical training or experience to tackle this incredibly difficult mathematical problem that no one up to that point had solved other than Dr. Wang,

- c. Teytel switched to multiple or mixed-seed selection method which makes no sense unless one is intent on targeting a known sequence like ACE. It takes longer to select sequences than the way Teytel claims to have done it than Defendants' prior method.. The mixed-seeds method provided no more likelihood of independently selecting an accurate sequence. But most importantly, the only way Teytel could have found a sequence that was both shorter than Defendants' 200 path production sequence and even as accurate would be by targeting ACE. Targeting is easy to do and easy to disguise in the final sequence.
- d. Teytel used the public domain arbitrary seed selection method of selecting his sequences. This method has zero chance of selecting a sequence that is as good as ACE 64 was demonstrated to be by Defendants' tests.
- e. In fact, he could not have selected the 64 path sequence in the time allotted under the seed selection and testing method he claims to have followed.
- f. Teytel's Notebook references ACE in such a way that he clearly had the ACE sequences and was testing the 100 path sequence against ACE 64.
- g. The testing allegedly performed by Dr. Polish as described at his deposition to detect targeting of ACE was too rudimentary and not powerful enough to detect the many ways that Defendants could have disguised their targeting of ACE (assuming, of course that the 100 path mixed-seed sequence Defendants produced is, in fact the one that they used in production). Dr. Polish claims to have run a test using Defendants 100 path mixed seed sequence in CGM 07073 but it was not the same 100 path mixed seed sequence produced by Defendants in this action at CGM 04945 1999-11-01 in the file called rand_num_100_199991101_86int.**
- h. Teytel's purported Algorithm makes no mathematical sense and Defendants have refused to produce their sequence selection code and sequence test system used to test their purported mixed seed sequence or any sequences to support their illogical claims.
- i. The forensic evidence (such as the correlation analysis along the time steps, across 64 paths, or both) demonstrates that Defendants targeted ACE 64.
- j. There is very strong evidence that the 1000 path sequence was phony and was not intended to be used by Defendants traders to price MBS. It was selected in too careless a manner under the circumstances..

120. The evidence shows that Defendants stole ACE, were creating derivative sequences using ACE, and created the phony 1000 path sequence about the time the 100 path mixed-seed sequence was allegedly made available to customers. It is reasonable to assume that there was a coherent scheme behind all of these actions.

121. These facts logically suggest that Defendants provided their own traders with the actual ACE sequences, whether disguised as a 100 path sequence or 200 path sequence (they could easily have approximated those number of paths by adding, say ACE 32 to ACE 64 which provides a 96 path sequence) or the super ACE 896 path sequence.

122. There was no reason to create derivative ACE sequences for Defendants' own traders. But an inferior, ACE derived, 100 path sequence would appear attractive to Defendants' 300 institutional customers because of increased speed (twice as fast as the prior 200 path single seed sequence). Targeting ACE would provide Defendants with a shortcut to select a 100 path sequence that was as accurate as their prior 200 path sequence. This approach would of course permit Defendants to make arbitrage profits in connection with their market making activities when trading with the more than 300 Yield Book institutional customers.

123. Whatever the Defendant actually did with ACE, the evidence is overwhelming that Defendants stole ACE, and were intent on creating derivative sequences using it. They then attempted to cover up their theft with the phony algorithm and apparently with the phony 1000 path sequence. The ACE sequences are very valuable for accurately pricing MBS.

(Emphasis added).

109. Defendants provided AAI with separate disks containing all of the sequences Defendants used in the Yield Book during the entire relevant period. CGM 04945-4946 (Ex. 62) (disks containing Defendants sequences); Radak Decl. ¶ 4 (Ex. 63) ("The Yield Book Sequence Production includes all versions of the Yield Book sequences using fewer than 1000 paths from the creation of the RCS directory on or about October 1, 1994 to September 1, 2000, and from that date to June 29, 2007, every version that is materially different.").

RESPONSE: Denied. Defendants provided disks the code is incomplete. See Response to 108.

110. In its complaint, AAI alleges that Defendants isolated a 100 path segment of the ACE sequence and later integrated that 100 path sequence into the Yield Book. Compl. ¶ 89 (Ex. 1) ("Defendants ordered Russell and others at SSB and SAI to analyze the misappropriated [sic] ACE sequence and to then isolate a 100 path segment of the ACE sequence ... Defendants then integrated the 100-path sequence into The Yield Book for use by its general clients ... ").

RESPONSE: Admit that this allegation was made before any discovery was had.

111. Dr. Fan, AAI's expert witness, never analyzed any of Defendants' actual Yield Book production code. Fan Tr. at 116:25-117:6 (Ex. 47) ("Q: Dr. Fan, you could have compared the new Yield Book sequences [that were developed after Defendants' testing of ACE] to the ACE sequences, yes? A: Yes, I could. Q: And you did not, correct? A: I did not..."); id. at 107:11-16 ("Q: Did you compare those sequences on that disk [the YB sequences] to any of the ACE sequences? A: The old and the new one or the - you have many sequences there. Q: Any of them? A: I didn't."); Fourth Polish Decl. at ¶ 12.

RESPONSE: Admit that Dr. Fan did not analyze the production code produced by Defendants because Defendants refused to produce the seed selection and testing system code and he therefore believed it would be unreliable. Further, there was no need to check it because Dr. Fan already found the incriminating evidence in the seed identified in the Teytel Notebook as the “Best” seed for the first position of his 64 path sequence that Defendants never produced. 2nd Fan Decl.:

87. Paragraph 6 (Fourth Point): As I explained above in response to the First Point in Dr. Polish’s paragraph 6, the purpose of my test was not to determine whether the so called 100 path mixed-seed sequence produced as part of the Yield Book production code had been selected by targeting ACE. The purpose of the test of to determine whether Defendants in fact had possession of the ACE sequences themselves. The production code Defendants actually used for trading purposes could easily be fabricated sequences with the real sequences Defendants used being read in with the “atoi() function.” The analogy is given earlier is applicable. I found that a trace of blood sample of victim “ACE64a” on the pocket of one of defendant’s old shirts, but Dr. Polish claimed that he cannot find it on the top part of the pocket of another shirt that the defendant wore a year after the incident. : There is no need to examine whether another of Defendants’ shirts has a trace of blood sample of victim “ACE64a”. I already found the incriminating trace on one of Defendants’ shirts.

88. As discussed above, I chose the “Best” seed from the abandoned 64 path Teytel mixed seed sequence because it appeared to be the most likely to be a genuine seed selected by Dr. Teytel, as documented in his Notebook. The results showed that Dr. Teytel had been targeting ACE 64 when selecting that sequence. My test result indicates that he did possess the ACE sequences. And Dr. Teytel and Defendants used ACE 64 as a target to select their 64 path sequence, which was not put into production and which they did not produce in this case. Defendants have withheld their selection code and testing system to select and test their 100 path mixed seed sequence. So there is no verification that it is a real sequence that they are using.

112. The conclusion in the Expert Report of Dr. Jianqing Fan (the "Fan Report") that Defendants improperly "targeted" the ACE Numbers is based on comparisons between a portion of one of the ACE 64 sequences to a sequence that Dr. Sen Hu, a non-testifying consultant retained by AAI, generated using seed (13812) identified in a notebook maintained by Dr. Teytel. Fan Report at 18-19 (Ex. 64). Dr. Fan is not aware of the manner by which Dr. Hu generated that sequence. Fan Tr. at 341: 14-342:05 (Ex. 47) ("Q: ... How were the, quote, complete 64 path sequences generated? A: I didn't generate the number, as I told you before ... Q: [Dr. Hu] tried different types of seeds as reflected in Dr. Teytel's notebook? A: That's my understanding. Q: You don't know either way? A: I don't know either way ... "); Fourth Polish Decl. ¶ 20.

RESPONSE: Denied. 2nd Fan Decl. see excerpt below:

.113. Paragraph 42. This has also been covered above. Dr. Polish even has the computer code to regenerate the figures himself. **It is NOT true that I do not know how Dr. Hu generated the sequence from seed 13812. Dr. Hu generated it using the “production code” from the Defendant and Dr. Polish, as a computer programmer himself, could have easily verified this himself** and disputed it if he had found an error. Instead, he chose to try to confuse the issue and used a completely different sequence that he alleged to be the 100 path sequence. But as elaborated in paragraph 118 below, I cannot verify the source of the data as he claimed.

85. Polish Paragraph 6 (Second Point): I have never admitted that my results are wrong. I admitted merely that we mixed up the results with some other outputs. In fact, I did not change the computer code. I just took the same input file and the same code and ran the results again and replaced those results on the second day of my deposition. In addition, I have verified many other aspects of Dr. Hu’s work, including counting the number of seeds and computing the number of hours. I have also run the KS test independently. **Dr. Hu is a**

respected expert in the field of mathematics and in Monte Carlo analysis and it is perfectly appropriate for another expert in the field like myself to rely on his work on this simple

issue and used a completely different sequence that he alleged to be the 100 path sequence. But as elaborated in paragraph 118 below, I cannot verify the source of the data as he claimed.

113. Dr. Fan did not verify the accuracy of the sequence Dr. Hu generated from seed 13812. Fan Tr. 341:14-342:05 (Ex. 47); id. at 191:07-192:09 ("Q: Exhibit F, did you prepare those charts and that's the same question that goes for Fan 4 which is a larger version of those numbers; you didn't prepare any of that information either, did you? A: That's correct. Q: Did you verify the accuracy of the information contained in Exhibit F to your report and Fan 4? A: F and Fan 4 I did, I compare with Excel file. Q: You compared with what? A: Excel file I had. Q: Where did you get that Excel file? A: From Dr. Hu. Q: You received an Excel computer file from Dr. Hu and you compared that computer file to Fan 4? A: That's correct. Q: And to Exhibit F? A: That's correct, Fan 4 was printed from the Excel file. Q: Did you verify the accuracy of the numbers contained in the Excel file that you received from Dr. Hu? A: I didn't."); Fourth Polish Decl. ¶ 13.

RESPONSE: Denied. Dr. Fan appropriately relied on Dr. Hu to generate the sequences using defendants code which was readily available to defendants to check. Defendants have produced no evidence to date that the sequence generated was inaccurate. 2nd Fan Decl. see below:

113. Paragraph 42. This has also been covered above. Dr. Polish even has the computer code to regenerate the figures himself. **It is NOT true that I do not know how Dr. Hu generated the sequence from seed 13812. Dr. Hu generated it using the "production code" from the Defendant and Dr. Polish, as a computer programmer himself, could have easily verified this himself** and disputed it if he had found an error. Instead, he chose to try to confuse the issue and used a completely different sequence that he alleged to be the 100 path sequence. But as elaborated in paragraph 118 below, I cannot verify the source of the data as he claimed.

85. Polish Paragraph 6 (Second Point): I have never admitted that my results are wrong. I admitted merely that we mixed up the results with some other outputs. In fact, I did not change the computer

code. I just took the same input file and the same code and ran the results again and replaced those results on the second day of my deposition. In addition, I have verified many other aspects of Dr. Hu's work, including counting the number of seeds and computing the number of hours. I have also run the KS test independently. **Dr. Hu is a respected expert in the field of mathematics and in Monte Carlo analysis and it is perfectly appropriate for another expert in the field like myself to rely on his work on this simple.**

114. AAI did not provide Dr. Fan with all of the ACE Numbers. Fan Tr. at 109:12-13 (Ex. 47) ("A: I didn't have whole ACE, I just had a fraction of ACE.").

RESPONSE: Admitted.

115. AAI did not provide Dr. Fan with the methodology used to generate ACE Numbers. Fan Tr. 25:14-18 (Ex. 47) ("Q: How did Dr. Wang generate the ACE sequences? A: Very frankly I don't look at his algorithm so I didn't look at his method. I got his numbers, but not his method."); id. at 26:24-27:05 ("Q: How were Dr. Wang's sequences developed, Dr. Fan? A: No, I didn't look at his development. Q: You don't know? A: I don't know.").

RESPONSE: Literally true but Dr. Fan was provided with information from which he could make an informed judgment about the nature of the method used to generate ACE and its effectiveness. See Deposition of Jianqing Fan:

25:14 Q. How did Dr. Wang generate the

25:15 ACE sequences?

25:16 A. Very frankly I don't look at

25:17 his algorithm so I didn't look at his method.

25:18 I got his numbers, but not his method.

25:19 Q. Did you ask for his method?

25:20 A. I did talk with him I mean

25:21 briefly. This involve like -- he says a
25:22 function at each dimension and to make as
25:23 uniform as possible, but I didn't ask him
25:24 exact function because we didn't even sit
25:25 down together to write formula or whatever.

26:1 FAN

26:2 Q. Describe for me your
26:3 understanding as to how the ACE sequences
26:4 were generated to the best that you can?

26:5 A. First of all, as I said before,
26:6 I didn't know his sequence, but I know it's a
26:7 deterministic algorithm aimed at minimizing
26:8 some discrepancies in high dimensional space.

26:9 Q. Can you elaborate on that, Dr.
26:10 Fan, or is that all you know about the
26:11 development of Dr. Wang's sequences?

26:12 A. I knew probably better in terms
26:13 of like other sequences that I have been
26:14 doing so I mean for other sequences, low
26:15 discrepancy sequences so you want every they
26:16 call elementary interval when it's large
26:17 enough and I mean expect the number of points
26:18 for that elementary interval should be

26:19 proportionate to the size of the interval.

26:20 Q. Your testimony is that

26:21 generally low discrepancy sequences are

26:22 designed to cover a space uniformly?

26:23 A. Right.

26:24 Q. How were Dr. Wang's sequences

26:25 developed, Dr. Fan?

27:1 FAN

27:2 A. No, I didn't look at his

27:3 development.

27:4 Q. You don't know?

27:5 A. I don't know.

27:6 Q. How do you know whether Dr.

27:7 Wang's sequences would continue to work in

27:8 perpetuity without being revised?

27:9 A. Because if we do not revise the

27:10 model, that is, if we use two factor models

27:11 so all you are really doing is computation

27:12 expectation of expected value of present

27:13 value and then it's correct to say you are

27:14 doing integral over high dimensional space

27:15 and so if you have a sequence uniform enough,

27:16 then the function value then and the function

27:17 value now should be very similar.

27:18 Q. What if the space changes over
27:19 time, the shape of the space changes over
27:20 time?

27:21 A. Unless you say that I'm not
27:22 going to implement the two factor models
27:23 described in the -- I mean in the paper by
27:24 Y.K. Chan and Bob Russell, Rob Russell,
27:25 unless you change the model so if you are

28:1 FAN
28:2 using that model and you want to compute
28:3 expected value, that would not change.

28:4 Q. You want to what?

28:5 A. You want to compute expected
28:6 present value, that would not change.
28:7 If you change the model, there will be
28:8 different things.

28:9 Q. How do you know if Dr. Wang's
28:10 sequences do in fact cover the space
28:11 uniformly?

28:12 A. So I mean all I know is from
28:13 the output of the first three tests,
28:14 particularly the third test in the Exhibit X

28:15 which has a better -- I mean has smaller OAS

28:16 errors.

28:17 Q. The third test in Exhibit X

28:18 has a smaller what?

28:19 A. OAS errors.

28:20 Q. Aside from your view of Exhibit

28:21 X, do you have any other basis for your

28:22 belief that Dr. Wang's sequences in fact

28:23 cover the space uniformly?

28:24 MR. MUNVES: Objection.

28:25 Q. You can answer.

29:1 FAN

29:2 A. Another thing of course I'm

29:3 looking is I think in one of my appendix C or

29:4 something like that and on the distribution

29:5 of the -- I mean at each dimension it looks

29:6 quite close to normal.

29:7 Q. You are talking about a graph?

29:8 A. Yes, talking about a graph and

29:9 also I got the first ten dimensions of his

29:10 data.

29:11 Q. When you say his data?

29:12 A. I mean Dr. Wang's data.

29:13 Q. The first ten dimensions of Dr.

29:14 Wang's sequences?

29:15 A. Sequences, yeah.

29:16 Q. So far you've listed three

29:17 things; you've looked at Exhibit X, the third

29:18 test, you have looked at a graph that shows

29:19 distribution of various sequences and you

29:20 have looked at the first ten dimensions of

29:21 Dr. Wang's sequences. Anything else that

29:22 supports your belief that Dr. Wang's numbers

29:23 in fact cover the space uniformly?

29:24 A. No.

29:25 Q. What experience do you have

30:1 FAN

30:2 with Monte Carlo simulation?

30:3 A. Fifty percent of my paper

30:4 actually contains some kind of Monte Carlo

30:5 simulations so we use Monte Carlo simulations

30:6 to verify various claims that we make in

30:7 theoretical studies so including some

30:8 financial instruments.

30:9 Q. You use Monte Carlo simulation

30:10 in about half of the papers you have

30:11 authored; is that your testimony?

30:12 A. Yes, I didn't count it, that's

30:13 roughly.

116. Defendants never used seed 13812 in production of the Yield Book. CGM 00176-177 (Ex. 46); Fan Tr. at 74:04-11 (Ex. 47) ("Q: Did you review the RCS directory? A: Yeah, I did. Q: Is seed 13812 reflected in the RCS directory that was produced by defendants? A: In those source code I read I didn't see the number.").

RESPONSE: Admit that this seed was not in the code produced but that is not all the code that Defendants used. See Response to 108.

117. Dr. Nathaniel Polish, Defendants' expert, analyzed the Yield Book production code and sequences and determined that the ACE Numbers cannot be found in any of that code and sequences. Expert Report of Dr. Nathaniel Polish ("Polish Report) at 4-6 (Ex. 65); Fourth Polish Decl. ¶ 8.

RESPONSE: Denied. Defendants have not produced all their sequence code. See Response to 108.118. Dr. Polish analyzed the Yield Book production code and sequences and determined that no traces of the ACE Numbers can be found in any of them. Polish Report at 4-6 (Ex. 65); Fourth Polish Decl. ¶ 8.

118. Dr. Polish analyzed the Yield Book production code and sequences and determined that no traces of the ACE Numbers can be found in any of them. Polish Report at 4-6 (Ex. 65); Fourth Polish Decl. ¶ 8.

RESPONSE: Denied. See Response to Section 117 above.

119. Dr. Fan cannot identify or confirm the distribution characteristics of the Yield Book production code because he did not analyze that production code. Fan Tr. at 116:251-117:6

(Ex. 47) ("Q: Dr. Fan, you could have compared the new Yield Book sequences [that were developed after Defendants' testing of ACE] to the ACE sequences, yes? A: Yes, I could. Q: And you did not, correct? A: I did not...").

RESPONSE: See Response to Section 111 above.

120. Dr. Fan was not provided with the entire sequence that Dr. Hu purportedly generated from seed 13812. Fan Tr. at 341:14-342:05 (Ex. 47); id. at 191:07-192:09 ("Q: Exhibit F, did you prepare those charts and that's the same question that goes for Fan 4 which is a larger version of those numbers; you didn't prepare any of that information either, did you? A: That's correct. Q: Did you verify the accuracy of the information contained in Exhibit F to your report and Fan 4? A: F and Fan 4 I did, I compare with Excel file. Q: You compared with what? A: Excel file I had. Q: Where did you get that Excel file? A: From Dr. Hu. Q: You' received an Excel computer file from Dr. Hu and you compared that computer file to Fan 4? A: That's correct. Q: And to Exhibit F? A: That's correct, Fan 4 was printed from the Excel file. Q: Did you verify the accuracy of the numbers contained in the Excel file that you received from Dr. Hu? A: I didn't."); Fourth Polish Decl. ¶ 20.

RESPONSE: Admitted, but Defendants could have verified its accuracy and did not contend it was inaccurate. 2nd Fan Declaration:

113. Paragraph 42. This has also been covered above. Dr. Polish even has the computer code to regenerate the figures himself. **It is NOT true that I do not know how Dr. Hu generated the sequence from seed 13812. Dr. Hu generated it using the "production code" from the Defendant and Dr. Polish, as a computer programmer himself, could have easily verified this himself** and disputed it if he had found an error. Instead, he chose to try to confuse the issue and used a completely different sequence that he alleged to be the 100 path sequence. But as elaborated in paragraph 118 below, I cannot verify the source of the data as he claimed.

121. Exhibit F to the Fan Report contains only the first 10 dimensions of the sequence Dr. Hu generated from seed 13812. Fan Report at Ex. F (Ex. 64).

RESPONSE: Admitted.

122. Dr. Fan did not perform the analysis contained in the Fan Report relating to the visual comparison of the distribution of the first ten dimensions of ACE 64 with the first ten dimensions of the sequences Dr. Hu generated from seeds identified in Dr. Teytel's notebook; Dr. Hu performed this analysis. Fan Tr. at 353:21-354:7 (Ex. 47) ("Q: What do you mean [in footnote 11 of your report] by 'beautiful, identical wacky curves'? A: All right. Let me look at this. First, we all know that this took from Dr. Hu's declaration, and I did look at it, but let me look at it again. Q: So you're saying that language came from Dr. Hu? A: I think so. Q: And you put it in your report? A: Yeah."); id. at 356:9-21; (explaining "what Dr. Hu basically meant" by the visual comparison prepared by Dr. Hu that was incorporated into Dr. Fan's report); id. 362:18-21 ("Q: The only K-S tests that support the expert report that you submitted in this case are those that were conducted by Dr. Hu? A. That's correct.")

RESPONSE: Denied.

2nd Fan Decl.

85. Polish Paragraph 6 (Second Point): I have never admitted that my results are wrong. I admitted merely that we mixed up the results with some other outputs. In fact, I did not change the computer code. **I just took the same input file and the same code and ran the results again and replaced those results on the second day of my deposition. In addition, I have verified many other aspects of Dr. Hu's work, including counting the number of seeds and computing the number of hours. I have also run the KS test independently. Dr. Hu is a respected expert in the field of mathematics and in Monte Carlo analysis and it is perfectly appropriate for another expert in the field like myself to rely on his work on this simple statistical task.**

113. Paragraph 42. This has also been covered above. Dr. Polish even has the computer code to regenerate the figures himself. **It is NOT true that I do not know how Dr. Hu generated the sequence from seed 13812. Dr. Hu generated it using the "production code" from the**

Defendant and Dr. Polish, as a computer programmer himself, could have easily verified this himself and disputed it if he had found an error. Instead, he chose to try to confuse the issue and used a completely different sequence that he alleged to be the 100 path sequence. But as elaborated in paragraph 118 below, I cannot verify the source of the data as he claimed.

123. Dr. Fan did not check the accuracy of Dr. Hu's analysis. Fan Tr. at 356:22-24 (Ex. 47) ("Q: Did you review the K-S tests conducted by Dr. Hu. A: I didn't run his code ... "); *id.* at 191:07-192:09.

RESPONSE: Denied. See Response to Section 122.

124. Dr. Fan cut portions from the electronic version of the Fourth Declaration of Dr. Hu submitted to this Court in support of AAI's discovery request on September 27, 200 and pasted them into his expert report, and "made [those portions] serve as [the] basis of' his expert report. Fan. Tr. at 133:07-134:08 (Ex. 47) ("Q: Were you provided an electronic version of Dr. Hu's report? .. A: Yes. Q: Did you work on that electronic version when preparing your report? A: Did I work on it, I took some those. Q: You took some of what? A: Some of - I mean file from there. Q: Did you cut and paste sections of his report into your report? A: Yeah, I made it serve as basis of my work. Q: His report served as a basis for your report? A: Right. Q: By that you mean you cut and paste certain sections from Dr. Hu's report, you took those sections from Dr. Hu's report, cut them out and put them into your report; is that right? A: Right, and make the necessary changes."); see, e.g., compare Fourth Decl. of Sen Hu at 15-19 (Ex. 66) with Fan Report at 16-18 (Ex. 64).

RESPONSE: Admitted.

125. Dr. Fan disavowed the conclusion contained in the Fan Report that Dr. Hu's graphs demonstrated "beautiful identical wacky curves," a phrase he admitted was copied from Dr. Hu's declaration, stating that such a comparison had no mathematical basis and would

require a judgment call that would differ from person to person. Fan Tr. at 355:24-356:05 (Ex. 47) ("Q: Tell me what you meant ... by 'beautiful, identical, wacky curves.' Is there a mathematical basis for that assertion? A: There's no mathematical basis. It's judgment call."); id. at 357:18-359:17 ("Q: ... I want you to look at the green and black curves. Do those show beautiful, identical, wacky curves?... A: You take a sentence that I think the language itself has a lot of argument and variations ... The judgment would be different from person to person ... Q: You don't have any mathematical support for that conclusion? A: That's correct."). Dr. Polish agrees with Dr. Fan's conclusion that there is no mathematical support for Dr. Hu's visual comparison of the first 10 dimensions of ACE 64 and the sequences generated by Dr. Hu. Polish Report at p. 8-9 (Ex. 65).

RESPONSE: Denied.

2nd Fan Decl. (due to a typographical error, the number .05% in 93 below is wrong by one decimal place. The actual number is .5%)

93. I did not reject any conclusions contained in Dr. Hu's report. In fact, my independent work on the spatial matches discussed above reinforces Dr. Hu's work. I merely said that the words "beautiful" and "identical wacky" require a judgment call. This judgment call is consistent with my statistical test result that showed that there was only a .05% probability that Teytel's "Best" seed had been selected independently without targeting ACE 64.

126. One of Dr. Fan's graduate students, not Dr. Fan, attempted to compute the correlation between the first eight time steps of the sequence purportedly generated by Dr. Hu from seed 13812 to the first eight time steps of one of the ACE 64 sequences. Fan Report at 18-19 (Ex. 64); Fourth Polish Decl. ¶ 17; Fan Tr. at 68:21-69:02 (Ex. 47) ("Q: You personally conducted that simulation experiment described on the bottom of page 18 and the top of 19 [of the Fan Report]? A: It's actually conducted by one of my students and I just give the number

without telling him what we are doing."). In fact, the Yield Book sequences have no fewer than 86 time steps. See Radak Decl. ¶ 5 (Ex. 63); Russell Tr. at 289:15-18 (Ex. 7); CGM 00176-177 (Ex. 46).

RESPONSE: Denied, Yield Book generates up to 116 time steps but any lesser number can be used depending on the time period desired to be covered. The 12th time step covers 1 year:

63:25 Q. How many time steps, interval

64:1 RADAK

64:2 steps, dimensions?

64:3 A. Okay. At that -- that initial

64:4 stage, the program -- the program

64:5 generates 100 -- enough Goshen random

64:6 numbers for 100 and 16 time intervals.

64:7 Q. Okay. So --

64:8 A. But immediately I concluded that

64:9 the -- those numbers that correspond to

64:10 intervals between 107 and 116 are never

64:11 used anywhere.

64:12 Q. Never used to do what?

64:13 A. To do anything. They are simply

64:14 never used. They are not used by

64:15 anything.

64:16 Q. Why is that?

64:17 A. I don't know. There

64:18 were -- first of all, what I do know is
64:19 that there is no need for those numbers
64:20 because those numbers would correspond to
64:21 time intervals beyond year 60. So that is
64:22 completely irrelevant for -- for our
64:23 generation of interest rate paths.

64:24 Q. So time intervals 107 to 116
64:25 corresponds to what time period?

65:1 RADAK

65:2 A. Year 60 to year 70.

65:3 Q. And what is -- what is 86 to
65:4 1 -- what is the intervals from 86 to 106?

65:5 A. From 40 to 60.

65:6 Q. What are those used for?

65:7 MR. MOORE: Objection.

65:8 A. In the code, there is a part of
65:9 the code that specifies how many of these
65:10 intervals will be of relevance later on.
65:11 In today's production, for example, the
65:12 relative value is 107, which means that
65:13 there are 106 intervals of importance, but
65:14 the Goshen random numbers that correspond
65:15 to a time interval -- time period from 30

65:16 years on I did not see them being used.

65:17 Q. What time interval corresponds

65:18 to 30 years?

65:19 A. Seventy-six.

65:20 Q. What corresponds to one year?

65:21 A. Twelve.

65:22 Q. What corresponds to one month?

65:23 A. One.

(Emphasis added)

The fact is irrelevant to Dr. Fan's tests which he opined were valid for the purposes of identifying targeting of ACE. 2nd Fan Decl.

111. Paragraph 40. This has already explained above. Both the best 16 matches and best 32 matches result in sound test statistics. Both of them indicate that the matches between an ACE 64 sequence and the sequence produced by seed 13812, identified as the "Best" seed in Teytel's Notebook, are much closer than usual, with a probability of 2.4%. The argument of Dr. Polish is completely irrelevant. His reasoning is similar to questioning why we compare only the faces of two persons, which comprises less 25% of the whole body, to determine whether the two persons are from the same race. It is a silly question.

127. The histograms attached to the Fan Report that purportedly serve as the basis for his conclusions about the correlation between the first eight time steps of a nonproduction sequence purportedly generated by Dr. Hu from seed 13812 to the first eight time steps of one of the ACE 64 sequences are incorrect. Fan Tr. at 272:06-10 (Ex. 47) ("I actually look at this picture [in Fan 6] and probably my student send the wrong one because it doesn't seem to match at least from what I'm reading here, he probably send me the wrong picture ... "); id. at 283:12-

284:23 ("Q: And you described to me that that chart [in the upper right hand corner of Fan 6] was incorrect? A: Right... Q: Is it also true that the remaining charts that are reflected in Fan-6 are also incorrect? A: That's correct... Q: And the histograms that are reflected in Exhibit G are based upon the charts that are in Fan Exhibit 6? A: That's correct. Q: So is it true, then, that the histograms in Exhibit G are also incorrect? A: That's correct."); Fourth Polish Decl. ¶¶ 21-22.

RESPONSE: Denied, See Response to Section 122.

I. AAI's Representations To The Court And To Defendants Concerning AAI's Alleged Trade Secret

128. AAI has represented to the Court that the trade secret AAI is asserting in this case consists only of the ACE Numbers. October 1, 2007 Hearing Tr. at 4:22-5:2 (Ex. 67) ("The Court: I've read - the problem I'm still having, and which I don't think was addressed by -I think it was Dr. Hu's affidavit-is my understanding of the trade secret that AAI is claiming here is a sequence of numbers. Am I correct in that? Mr. Collins: Yes, Your Honor."); July 2, 2007 Hearing Tr. at 99: 15-17 (Ex. 68) ("Mr. Munves: And there's an important point here, Judge. It's not only did they copy the exact ACE number, that they selected seeds that resulted in the exact ACE numbers."); August 21, 2007 Hearing Tr. at 16:15-25 (Ex. 69) ("Mr. Munves: It wasn't a method at all. It was just the actual sequences themselves, the numbers that you use to create the interest rate scenarios in every circumstance. It's just a set of numbers ... The Court: And the set of numbers don't ever change? Mr. Munves: And they never change."); id. at 37-38:24-04 ("Mr. Munves: ..If you change the number of dimensions, it's no longer the same sequence. You have no idea what the result's going to be. If you change the number of paths, you have no idea what the result is going to be, because a sequence is a very carefully selected set of numbers. You can't change them. You can't fiddle with them."); id. at 43:08-09 ("Mr. Munves: ACE 64 has not changed in years because it is just a set of numbers ... "); Wang Tr. at 106:10-14 (Ex. 10) ("Q: ...

Your ACE sequences consist of a specific set of numbers that have been produced to the defendants in this litigation; is that correct? A: Yes.").

RESPONSE: Denied. The issue being discussed was what the ACE sequences themselves were, not whether Defendants could have selected derivative sequences by targeting ace which is the only benefit to be derived from using mixed seeds. SEE 2nd Fan Decl.

59. The only explanation of what Dr. Teytel could have hoped to accomplish a mixed-seed selection process that would otherwise take him tens of years is that rather than following the nonsensical Algorithm, Teytel was using the mixed-seed method to target ACE. In contrast to the two hours for each of the 390,000 seeds Teytel would have had to devote for these alleged tests, it would have taken only seconds to compare the distribution of the sequence generated by each of the seeds to the distribution of ACE 64, or to compare the distribution of the future interest rate paths generated by the seeds with the distribution of the future interest rate paths generated by ACE 64. This was the only type of comparison that was feasible in the months that Teytel allegedly tested his 390,000 seeds. Thus, Teytel would have no problem running through all the hundreds of thousands of seeds listed in the Notebook for the purpose of approximating ACE.

60. My own correlation analysis provides stark evidence that Teytel was using the mixed seed method to target ACE. The correlation analysis on the sequence generated by Dr. Teytel's "best" seed 13812 for the first time band shows unusual correlation between that sequence and the ACE 64 sequence, both vertically (along time steps) or horizontally (across 64 paths) or both. The analysis has been provided in my expert report and elaborated during my second day deposition. It will be explained further below.

129. Dr. Wang denied that Defendants had stolen the distribution characteristics of the ACE Numbers. Wang Tr. at 284:16-285:1 (Ex. 10) ("Q: Do you think that the defendants stole

the distribution of your ACE sequence? A: I believe the defendants stole the sequence itself, the number itself, not just stole the distribution. Q: You don't believe the defendants stole the distribution, you believe the defendants stole the sequence? A: There's nothing called distribution being stolen. ").

RESPONSE: Denied.

The statement is taken out of context. A review of the entire testimony clearly shows that Dr. Wang was testifying that he believed that they stole the sequences in addition to targeting the distribution to obtain the benefits of ACE. It is a matter of semantics that defendants are trying to seize upon to cloud the issue. Dr. Wang's complete testimony on the subjects is:

284:16 Q. I will. Do you think that the
284:17 defendants stole the distribution of your ACE
284:18 sequence?

284:19 **A. I believe the defendants stole**
284:20 **the sequence itself, the number itself, not**
284:21 **just stole the distribution.**

284:22 Q. You don't believe the
284:23 defendants stole the distribution, you
284:24 believe the defendants stole the sequence?

284:25 A. There's nothing called
285:1 Wang
285:2 distribution being stolen. What I'm saying
285:3 is that defendants -- it's so easy for them
285:4 to stole my secrets if, you know, they are
285:5 not meaning to comply with non disclosure
285:6 agreement, I could not stop them so there's
285:7 no purpose just to steal the distribution, it
285:8 makes no sense so I have never thought about
285:9 the question you thought I should have
285:10 thought about for years ago.

285:11 **Q. Is there a particular**
285:12 **commercial value to the distribution**
285:13 **characteristic of the ACE sequences?**

285:14 **MR. COLLINS: Objection.**

285:15 A. The commercial value would be
285:16 that find some -- in a nutshell answer yes.

285:17 Q. How so?

285:18 A. Because if you can find a

285:19 similar known path and similar number of
 285:20 points have similar distribution, that could
 285:21 be beneficial property for, you know, if you
 285:22 want to do this kind of targeting it could
 285:23 have beneficial property if you have the
 285:24 sequence at hand, you could target the known
 285:25 sequence and get some beneficial property.

286:1 Wang

286:2 Q. How beneficial?

286:3 A. Depends on how good the
 286:4 targeting was. You could get identical
 286:5 distribution, you know, and high dimensions
 286:6 included and that would be -- you would get
 286:7 very similar results.

(Emphasis added)

Defendants have misconstrued Dr. Wang's answer and taken one sentence out of context. Defendants counsel first questioned Dr. Wang about a hypothetical mathematical question that "how someone could calculate the distribution of a known sequence without first having in the palm of his hand the sequence itself", Wang Tr.281:25-282:3. After Dr. Wang answered this question, *Id.* 282:4-283:20, he was wondering, "how does your question, you know, get the distribution without knowing the sequence, how does that relate to the litigation, I don't see the connection?" Responding to the question what Defendants have stolen in the theft, Dr. Wang's answer was "A: I believe the defendants stole the sequence itself, the number itself, not just stole the distribution." Simply rejecting Defendants' counsel's another vague question "You don't believe the defendants stole the distribution" [without stealing the sequence].his second comments explained it: "A: There's nothing called distribution being stolen [without a sequence being stolen, because a distribution is a distribution of some sequence], What I'm saying is that defendants -- it's so easy for them to stole my secrets if, you know, they are not meaning to comply with non disclosure agreement, I could not stop them so there's no purpose just to steal the distribution, it makes no sense so I have never thought about the question [stealing distribution without stealing the sequences]you thought I should have thought about for years ago.", therefore Defendants counsel's initial question that "calculate the distribution of a known sequence without first having in the palm of his hand the sequence itself" has no relevance to this litigation. *Id.*283:21-285:25. Defendants "copied" ACE distributions, or as Defendants' puts it "Defendants' stole ACE distribution", was only an inaccurate way to state the evidence that Defendants' sequences have very similar distributions to the stolen ACE sequences. It is only an evidence to one of Plaintiff's Claims, not a claim itself. Wang Declaration.2. Dr. Wang was simply rejecting Defendants' counsel's vague question "You don't believe the defendants stole the distribution"[without stealing the sequences] All of the questions and answers cited in No. 129 has nothing to do with the evidence that Defendants' derivative sequences have very similar distribution to ACE. Dr. Wang never rejected such evidence, and immediately pointed out the benefit to defendants' targeting: "Because if you can find a similar known path and similar number of points have similar distribution, that could be beneficial property for, you know, if you want to do this kind of targeting it could have beneficial property if you have the sequence at

hand, you could target the known sequence and get some beneficial property.” By way of further response, AAI repeats and incorporates by reference its response to No. 22.

Targeting of the ACE sequences was confirmed in the 2nd Fan Decl. (“.05% in 80 below is a typographical error. It is one decimal place off and should read .5%)

79. An “unusual match” is quantified by its percentile ranking in the matches among 100,000 seeds selected at random. This gives a probability of “unusual-ness” and oddness. For example, our final computation results showed that if the seed “13812” were selected independently, without benefit of targeting the ACE sequence, the chance that such a good match would result was only 5 in 1000 or .05%. This is ten times smaller than the usual statistical test of 5% percent used at the litmus test for rejecting claims of independent selection. This is very strong statistical evidence that Dr. Teytel targeted ACE in selecting his 64 path mixed-seed sequence and therefore had access to and made use of the ACE sequences. (It will be recalled that Dr. Teytel went to work at Defendants after Defendants ceased testing ACE and rejected the ACE license terms proposed by Plaintiff.)

80. This .05% finding was provided in my second day’s deposition and the defendants have our code to verify this (In fact the defendants have never disputed our numbers). I compared the unusual-ness of the matches of the two sequences both temporally (across the first 8 time steps which include the first 16 numbers – 2 for each time step in Defendants’ model) and spatially (across the distributions of random numbers across all 64 paths for each given dimension).¹⁶ The former alone gives the probability of unusual-ness of 2.6% in the temporal match and the latter gives the probability of usualness of 3.4% in the spatial match. Each of these evidences alone is smaller than 5% in statistics practice. The combined evidence of unusual-ness is 5 in 1000. Thus, the evidence against the statement that the “best” seed “13812” was selected independently is extremely strong.

130. Defendants requested that AAI “identify with particularity the distribution characteristics and properties of the ACE Numbers.” Defendants’ Fourth Set of Interrogatories No. 1 (Ex. 70).

RESPONSE: Admitted

131. In response to Defendants’ request that AAI identify with particularity the distribution characteristics and properties of the ACE Numbers, AAI stated that “with respect to the particular characteristics of the ACE sequences, distribution characteristics and properties,

see deposition testimony of Dr. Wang and Expert Report of Dr. Fan." Supplemental Response To Defendants' Fourth Set of Interrogatories No.1) (Ex. 71).

RESPONSE: Admitted

132. Dr. Wang did not identify the distribution characteristics of the ACE Numbers during his deposition testimony. Wang Tr. at 269:21-270:2 (Ex. 10) ("Q: Do you believe there's something special about the distribution of the ACE sequence? ... A: Well, because the distribution it's quite vague concept.").

RESPONSE: Admit but Dr. Fan gave a further explanation:

2nd Fan Decl.

95. Further, the ACE sequence information I reviewed has many mathematical characteristics that are hard to describe. One of them is the distribution characteristics of the data (numbers) in the data clouds (the universe of numbers in the sequence). The data is placed on the high-dimensional cube as uniformly as possible. As a result, with a conventional transformation, the distributions of the number in any path and across all the paths in any time steps should ideally be close to normal – a Bell curve distribution. Contrary to Dr. Polish's Declaration and Expert Report, these characteristics cannot easily be achieved with so many time steps (86 for 30 years) and so few paths (100 or 200).

133. The Fan Report asserts that "the distribution of sequences generated by seeds selected by Teytel notebook have extremely similar distributions to ACE." Fan Report at 16 (Ex. 64). However, the only definition of "distribution" provided in the Fan Report is as follows: "The 'distribution' at any such point on the x-axis is a measure of the probability that the 64 numbers appear less than or equal to the number selected." Fan Report at 17 (Ex. 64). The Fan Report does not specify the actual distribution characteristics of the ACE Numbers.

RESPONSE: Admitted, but see 2nd Fan Decl.

95. Further, the ACE sequence information I reviewed has many mathematical characteristics that are hard to describe. One of them is the distribution characteristics of the data (numbers) in the data clouds (the universe of numbers in the sequence). The data is placed on the high-dimensional cube as uniformly as possible. As a result, with a conventional transformation, the distributions of the number in any path and across all the paths in any time steps should ideally be close to normal – a Bell curve distribution. Contrary to Dr. Polish's Declaration and Expert Report, these characteristics cannot easily be achieved with so many time steps (86 for 30 years) and so few paths (100 or 200).

134. After the first day of his deposition, Dr. Fan provided a replacement set of materials in support of his correlation analysis. Fourth Polish Decl. ¶¶ 23-25. But these materials are inaccurate for the same reasons as the first set. Id.

RESPONSE: Denied

2nd Fan Decl.

100. Paragraph 20—23: I only admitted the degree to which that we mixed up the input files and output files. We have not changed the code. The whole computation code was given to defendants to avoid the ambiguity of methodology and allow them to replicate my work. Dr. Polish has found no errors in my work because there are none.

135. The correlation values Dr. Fan computed for the 100,000 64 path sequences used as a benchmark in the comparison of the correlation of the first eight time steps of a non-production sequence purportedly generated by Dr. Hu from seed 13812 to the first eight time steps of one of the ACE 64 sequences are incorrect. Fourth Polish Decl. ¶¶ 26-29.

RESPONSE: Denied

2ND Fan Decl..

102. Paragraphs 26--30. This analysis of Dr. Polish has no value. Although reading Dr. Polish's Fourth Declaration, one is given the distinct impression that he tested ACE 64 against the Teytel "Best" seed from his efforts to select a 64 path mixed-seed sequence, in fact we have recently learned from Defendants' counsel that his is not what Dr. Polish did at all. Instead, he allegedly tested ACE 64 against a different sequence, the Teytel 100 path mixed-seed sequence, which was allegedly used in production. E-mail of Christopher Moore, April 14, 2008, regarding Polish test code produced (Munves Decl. S). This is an astonishing effort at misdirection from a purported computer scientist. Moreover, as discussed extensively above, it has no bearing on the results of my tests of the 13812 Teytel "Best" seed from which I concluded that it had been selected by targeting ACE 64.

103. Furthermore, Dr. Polish has made a fatal mistake in his analysis that caused the inconsistency of his results with mine. First of all, his excel output (CGM-CGM 07072) reveals that even though he used the numbers from the first 8 time steps of ACE 64, Dr. Polish only correlated 8 numbers from the first factor of ACE 64 with those sequences generated from random seeds, and applied a similar method to the second factor. This is not what I have done. What I did is to use the 16 numbers, not 8 numbers, from both factors and computed the relevant correlations. That is clearly stated in my deposition and contrarily to his claim, Dr. Polish has my computer code to verify this:

82:3 Q. All the computations comparing
 82:4 16 numbers of ACE to 16 numbers of each of
 82:5 the 64 paths generated from the seed that Dr.
 82:6 Hu gave you?
 82:7 A. Let me say that again. We
 82:8 examined 16 path rather than 16 numbers.
 82:9 Q. 16 paths or 16 numbers?
 82:10 A. Happens to be the same here.
 82:11 Happens to be -- both are 16 so I look at
 82:12 best -- I mean ACE -- 16 number of ACE trying
 82:13 to correlate with 16 number of YB sequence as
 82:14 defined by this Exhibit F and so I get one
 82:15 match, I compute the correlation, I recall
 82:16 the correlation and then I delete the pay
 82:17 out, now both has 63 path. Again, I find the
 82:18 first sequence of ACE, different first, not
 82:19 the first one because indeed it's the second
 82:20 one of ACE with the best match of -- I mean
 82:21 with the best match -- (Emphasis added)

104. Matching only 8 numbers as Dr. Polish did is much easier than matching 16 numbers as I did.

Dr. Polish's mistake concerning the number of numbers used is the main reason for the discrepancy between his results and mine. Indeed, Dr. Polish appears to have done this deliberately because he knew that using longer numbers would result in few matches which would not support his high

correlation. Dr. Polish stated in his Fourth Declaration (paragraph 41): “The longer the two series are the less likely they are to match in their entirety” (smaller correlation). He was just being misleading. Therefore, the conclusions that he drew based on his incorrect analysis have no value. That includes the conclusions he drew in paragraphs 26-30 and Exhibits therein. They are totally wrong.

136. Dr. Polish's analysis demonstrates that the 64 path sequence Dr. Hu generated from 13812 does not correlate to ACE 64 as highly as Dr Fan's report states. Fourth Polish Decl. ¶ 28.

RESPONSE: Denied. See Response to Section 135

137. The formula Dr. Fan used to compute the correlations reflected in the Fan Report is not included in the Fan Report. That formula was provided to Defendants for the first time during Dr. Fan's deposition, and is identified in its entirety on Fan Exhibit 3. Fan. Tr. at 89:21-25 (Ex. 47) (“Q: Fan 3 as I understand it, Dr. Fan, is the method that you used to calculate the correlation that's reflected in Exhibit G, is that correct? A: Yes, it's used to compute the correlation of two paths.”); Fan Exhibit 3 (Ex. 72). Based upon the deposition testimony provided by Dr. Fan, Dr. Polish concluded that Dr. Fan's correlation analysis is meaningless. Fourth Polish Decl. ¶¶ 5-6, 12-42.

RESPONSE: Denied

Dr. Polish is wrong and not qualified to provide the opinions he provided

2nd Fan Decl.

71. Paragraph 6 First Point: In his Fourth Declaration Dated February 15th, 2008, Dr. Nathaniel Polish (“Polish Decl.”) completely misstates the points that I established and tries to convolute them. His first sub-point that the Yield Book production code does not use the seed from the Teytel Notebook that was tested is irrelevant to the point I was making. What was demonstrated by the testing was that the Teytel seed tested was selected by targeting the ACE 64 sequence. The point was to demonstrate that Dr. Teytel possessed ACE sequences at the time he was testing his 64 path sequence. If he possesses a piece of the ACE 64 sequence, then the conclusion to be drawn is that he had all the ACE sequences.

72. The analogy is that I found that a trace of blood sample of victim “ACE64a” on the pocket of one of defendant’s old shirts, but Dr. Polish claimed that he cannot find it on the top part of the pocket of another shirt that the defendant wore a year after the incident. His point is completely irrelevant to the claim that I tried to establish. In addition, as below, Dr. Polish did not even examine the whole pocket of the shirt, not to mention other areas of the shirt. Indeed, he even took a wrong shirt of the defendant’s brother’s. See paragraph 118.
73. Further, my tests show that the Teytel mixed seed 64 path sequence was not being selected by following his so called Algorithm, as he claims, but rather by targeting ACE 64. This supports my analysis above that his Algorithm is nonsensical. Defendants claim that all their other mixed-seed sequences, the 100 and 200 path mixed seed sequences that were put into production, were selected using the so called Algorithm. But this test demonstrates that Dr. Teytel was really using the mixed-seed method to target a known sequence, ACE. In fact, the only benefit of selecting a sequence using mixed seeds is to target a known sequence like ACE.
74. Defendants’ appear to contend that if the Yield Book production code does not reflect the use of a particular ACE sequence, the ACE sequence could not have been used in the Yield Book. This is untrue. There is a function called “atoi()” in the production code that can read and use any sequences from a file that is not in the code so that Yield Book users can use that sequence even though it is not in the production code. Using this function, any time they chose Defendants could have read in the ACE sequences to be used instead of the sequences in the production code.
75. My findings show that that Dr. Teytel had access to and possession of the stolen the ACE sequences. Defendants own actions of offering to license it shows that they believed ACE to be more accurate than their existing 200 path single seed sequence. The inference to be drawn from these facts is that in one form or another they gave ACE to their own MBS traders whom they would want to have the most accurate sequences. They could have easily done it with the atoi() function.
76. To demonstrate that Dr. Teytel was targeting an ACE sequence, I decided to check whether the first 8 time steps of an ACE sequence revealed an unusually close match with the first 8 time steps of one of Teytel’s sequences. I felt the best candidate would be the Teytel 64 path sequence which is partially reflected in his Notebook. Teytel Notebook CGM 00209 (Munves Decl. P). Defendants never produced the final 64 path Teytel sequence, but Teytel’s Notebook did reflect that seed “13812” was the “best” seed for the first seed position of his mixed-seed 64 path sequence. Teytel Notebook CGM 00209 (Munves Decl. P). I believed that this early test seed from the abandoned 64 path mixed seed sequence was the most reliable information in Teytel’s Notebook precisely because Teytel never produced his final 64 path sequence and therefore would not likely see a reason to fabricate it. Based on the fact that the Teytel 100 path mixed-seed sequence has 86 time steps, it seemed safe to assume that the first seed of his 10 seed sequence would cover at least 8 time steps.
77. Dr. Teytel claimed that his 64 path sequence was a failure in that it was not even as accurate as the 200 path single seed sequence Defendants sought to replace. For my

purposes, this claim was irrelevant. Whether the resulting sequence was good or bad did not matter. The only relevant issue was whether the first 8 time steps of a 64 path sequence generated using Teytel “best” seed and Defendants’ code bore an unusually close similarity, from a statistical standpoint, to the first 8 time steps of an ACE sequence. If so, it would indicate that Dr. Teytel had targeted ACE in selecting that seed. If he targeted the first 8 time steps of the ACE sequence, he obviously had the sequence and if Teytel and Defendants had one of the ACE sequences that they were not supposed to have, the obvious conclusion is that they had the rest.

78. As I explained above, since Dr. Teytel had selected a 64 path sequence, I chose to test the numbers in the first 8 time steps of the 64 path sequence generated by Teytel’s “best” seed candidate in his Notebook against the first 8 time steps of the ACE 64 path sequence. It was the most natural candidate as Defendants were not using a 64 path sequence before Dr. Wang presented them with ACE for testing.

79. An “unusual match” is quantified by its percentile ranking in the matches among 100,000 seeds selected at random. This gives a probability of “unusual-ness” and oddness. For¹⁶ Visualize each 64 paths lined up vertically next to each other with each path having 8 time steps with a pair of numbers at each time step. The temporal comparison would be looking at the 8 pairs of numbers vertically and the spatial comparison would be comparing the numbers horizontally across all 64 paths. example, our final computation results showed that if the seed “13812” were selected independently, without benefit of targeting the ACE sequence, the chance that such a good match would result was only 5 in 1000 or .05%. This is ten times smaller than the usual statistical test of 5% percent used at the litmus test for rejecting claims of independent selection. This is very strong statistical evidence that Dr. Teytel targeted ACE in selecting his 64 path mixed-seed sequence and therefore had access to and made use of the ACE sequences. (It will be recalled that Dr. Teytel went to work at Defendants after Defendants ceased testing ACE and rejected the ACE license terms proposed by Plaintiff.)

80. This .05% finding was provided in my second day’s deposition and the defendants have our code to verify this (In fact the defendants have never disputed our numbers). I compared the unusual-ness of the matches of the two sequences both temporally (across the first 8 time steps which include the first 16 numbers – 2 for each time step in Defendants’ model) and spatially (across the distributions of random numbers across all 64 paths for each given dimension).¹⁶ The former alone gives the probability of unusual-ness of 2.6% in the temporal match and the latter gives the probability of usualness of 3.4% in the spatial match. Each of these evidences alone is smaller than 5% in statistics practice. The combined evidence of unusual-ness is 5 in 1000. Thus, the evidence against the statement that the “best” seed “13812” was selected independently is extremely strong.

81. Defendant’s former director in Mortgage Research and expert in statistics, Dr. Y.K. Chan testified, and any sensible statisticians would agree, that the only benefit of using mixed seeds is to approximate certain properties of a sequence of numbers:

132:10 11 Q. What would be the benefit of feeding

¹⁷

As corrected by errata sheet.

132:11 12 mixed seeds into the random number generator to
132:12 13 produce a sequence, to your understanding, the
132:13 14 best you can understand?
132:14 15 MR. MOORE: Objection.
132:15 16 A. It would be to guard¹⁷ against some
132:16 17 poorly-performing random number generators.
132:17 18 Q. Anything else? Any other reason?
132:18 19 A. I can't think of any.

....
137:9 10 Q. Would it be easier to approximate
137:10 11 distribution of a sequence by selecting seeds and
137:11 12 trying to find a seed that approximates the
137:12 13 distribution of a known sequence?

....
137:14 15 A. Yes. In that case, using a number of
137:15 16 seeds could -- could have some benefit.
137:16 17 Q. A benefit would make it easier to
137:17 18 approximate the distribution of the known
137:18 19 sequence?

.....
137:20 21 A. Yes. By breaking up possible -- by
137:21 22 breaking up possible patterns in the random
137:22 23 number generator.

82. Dr. Teytel could have targeted 16 paths or 32 paths from one ACE sequence and another 16 paths or 32 paths from another ACE sequence. Therefore, it was reasonable to select 16 paths or 32 paths to examine the degree of matches between the 64 path ACE sequence and "best" seed "13812" in Dr. Teytel's Notebook. Even if Dr. Teytel selected his seed "13812" without the benefit of ACE, the average correlations of the best 16-path matches and the best 32-path matches are still fair test statistics in assessing the degree of unusual matches between the ACE sequence and the sequence generated from the "best seed 13812" in Teytel's notebook. This is because that all 64-path sequences generated from 100,000 seeds randomly selected are subject to the identical standard of scrutiny. The procedure that I used is well known by professional statisticians. Apparently, Dr. Polish did not understand this. This is natural, as he is a computer programmer rather than a professional statistician. This is also clearly evidenced by the fact that he could not even produce at his deposition the formula of the density of a normal distribution, the mostly commonly used density in statistics that most undergraduate students would know:

23:23 Q. Do you know the mathematical
23:24 formula for the density of a normal
24:1 distribution?
24:2 A. Not off the top of my head.
24:3 I've seen it many times, but I don't remember
24:4 off the top of my head.

83. Remarkably, as I testified at my deposition, though Defendants used pair of numbers at each dimension in their 200 path single seed production sequence (used before Dr. Teytel's work), in accordance with the procedure when one uses a two factor model, it is not, in fact, a genuine two-factor model. The first dimension for the first four paths in the 200-path single seed sequence (used from October 10, 1994 till the introduction of 100-path mixed-seed sequence in 1999) look like: (1.23456, 1.23456), (-1.23456, -1.23456), (-0.78901, 0.78901), (-0.78901, 0.78901) --- this repetitive pattern continues for the rest of the 196 paths. Note the specific relations between the first factor (the first number in the parenthesis) and the second factor (the second number in the parenthesis) --- they are highly dependent and the first path and the second path use identical factors and the third path and fourth path are indeed identical. (This casts serious doubt on the fidelity of the sequence, as it puts 25% redundant paths in the sequence, which creates biases and slows down significantly computing time that they are trying to improve.). In contrast, for the first 4 paths in the Teytel's 100-path sequence implemented in April, 1999, the two factors in the first 4 dimensions are entirely different: (0.20406, 0.95664), (-0.20406, -0.95664), (-0.95664, 0.20406), (0.95664, -0.20406) and this pattern continues for the rest of 96 paths. This 100 path sequence (implemented, of course, after Defendants' last test of ACE) follows the same genuine two-factor model that Dr. Wang implemented in his ACE sequences except that the orthogonalization and antithetic methods have been explicitly used by Defendants.
84. At the time of his alleged development of his so called Algorithm and 100 path mixed seed sequences, Dr. Teytel had no research experience in simulation and could not even recall whether he had heard the term "seed" before (Teytel Deposition May 17, 2007, .Tr, 65:18-20, 68:4-13 and 189:11-190:16, Munves Decl. N) He plainly had no training or experience with financial term-structure models, nor stochastic differentiations, nor statistics needed to calibrate the model parameters. Were he to have developed any sequences independently, he would likely have followed the repeated factor patterns of the 200-path production sequence instead of the non-repeating patterns of Dr. Wang's ACE sequences. To follow in Dr. Wang's footsteps, he would have had to recalibrate the model parameters in the two-factor model. He was clearly not capable of doing that. This is further evidence that Dr. Wang's ACE sequences with their genuine two-factor approach had been targeted.

Rebuttal of Dr. Polish's Fourth Declaration (II):
Dr. Polish's Logic is Wrong and Convolutates the Issues

85. Polish Paragraph 6 (Second Point): I have never admitted that my results are wrong. I admitted merely that we mixed up the results with some other outputs. In fact, I did not change the computer code. I just took the same input file and the same code and ran the results again and replaced those results on the second day of my deposition. In addition, I have verified many other aspects of Dr. Hu's work, including counting the number of seeds and computing the number of hours. I have also run the KS test independently. Dr. Hu is a respected expert in the field of mathematics and in Monte Carlo analysis and it is perfectly appropriate for another expert in the field like myself to rely on his work on this simple statistical task.

86. Polish Paragraph 6 (Third Point): I have never testified that the correlation analysis is not useful for determining whether a sequence designed to value MBS is derived from another such sequence. On contrary, what I meant more precisely is that a sequence derived from another sequence is useful for valuation of MBS. The degree of usefulness can be determined by empirical testing. The defendants have the testing system to do this and to value the benefit of targeting. They never provided Plaintiff with their test system including the MBS and interest rate related inputs and outputs.
87. Paragraph 6 (Fourth Point): As I explained above in response to the First Point in Dr. Polish's paragraph 6, the purpose of my test was not to determine whether the so called 100 path mixed-seed sequence produced as part of the Yield Book production code had been selected by targeting ACE. The purpose of the test of to determine whether Defendants in fact had possession of the ACE sequences themselves. The production code Defendants actually used for trading purposes could easily be fabricated sequences with the real sequences Defendants used being read in with the "atoi() function." The analogy is given earlier is applicable. I found that a trace of blood sample of victim "ACE64a" on the pocket of one of defendant's old shirts, but Dr. Polish claimed that he cannot find it on the top part of the pocket of another shirt that the defendant wore a year after the incident. : There is no need to examine whether another of Defendants' shirts has a trace of blood sample of victim "ACE64a". I already found the incriminating trace on one of Defendants' shirts.
88. As discussed above, I chose the "Best" seed from the abandoned 64 path Teytel mixed seed sequence because it appeared to be the most likely to be a genuine seed selected by Dr. Teytel, as documented in his Notebook. The results showed that Dr. Teytel had been targeting ACE 64 when selecting that sequence. My test result indicates that he did possess the ACE sequences. And Dr. Teytel and Defendants used ACE 64 as a target to select their 64 path sequence, which was not put into production and which they did not produce in this case. Defendants have withheld their selection code and testing system to select and test their 100 path mixed seed sequence. So there is no verification that it is a real sequence that they are using.

Rebuttal of Dr. Polish's Fourth Declaration (III):

Dr. Polish's did not follow the method that I used that result in discrepancies

89. Dr. Polish's attached figures are very different from our own because Dr. Polish did not test the Teytel "Best" seed against ACE 64 like I did. He also did not properly follow the method that I used. I tested using the first 16 numbers in the first 8 time steps whereas he used only the first 8 numbers in the first 8 time steps. There was no reason Dr. Polish could not replicate my work. Indeed, I gave Defendants the computer codes related to our computation. If he did not try to replicate it, it was his own choice. The Defendants have never presented us with any claimed errors in our code or calculations. Clearly, my analysis is correct. Dr. Polish's silence on the subject confirms that our conclusion that Dr. Teytel targeted the ACE 64 path sequence and therefore Defendants possessed them.

Rebuttal of Dr. Polish's Fourth Declaration (VI):
Dr. Polish Lacks Training and Expertise to Evaluate the Efficacy of a Sequence or Method for Creating a Sequence

97. Paragraph 11-16: I have already responded these contentions in my points above. I do not need to elaborate further. Dr. Polish has no training, experience or demonstrated expertise to evaluate the efficacy of a sequence or method for creating or selecting a sequence. He is certainly not a mathematician with any knowledge of the statistical principles underlying creation and selection of sequences or Monte Carlo simulation. He does not even know the mathematical formulas of the Gaussian density that a first year student of statistics would know. He is not qualified to give an opinion in this field of mathematics. For example, to see the trace of the sequence ACE64a in the sequence that was generated using the "Best" seed 13812, it is common sense that it suffices to match a fraction of them, as Dr. Teytel's first seed might not cover 8 time steps and above. To provide adequate evidence that Dr. Teytel possessed ACE sequences, it is sufficient to find the trace in one sequence, whether it is in the production code or in another code. Using the analogy earlier analogy, all I need to find is a shirt, whether it was worn a year after the incidence or not, to contain the blood of victim "ACE64a." That shirt was easy to find. The number one suspect that is called "Best" seed "13812" in Dr. Teytel's notebook (the shirt worn on the day of incidence) contained it.

98. Paragraph 18: Dr. Polish claimed that he is a computer scientist and an applied mathematician, but he demonstrates his lack of knowledge in statistics when he indicates that he does not understand the well known statistical phrase "tends to be larger than usual." In the field of statistics it means that something that is at the 95th percentile or even more extreme. In statistical profession and statistical applications including finance, economics and biomedical sciences, this shorthand phrase is as well understood as a "foul short" in basketball. This is merely additional evidence that Dr. Polish's does not have sufficient training or experience to qualify as the expert witness in the field of statistics and Monte Carlo simulation. In fact he admitted as much at his deposition:

147:6 Q. So when you look at the
 147:7 algorithm, you can't tell just looking at this
 147:8 procedure, this algorithm, whether or not it
 147:9 is particularly well designed to create a
 147:10 sequence that has advantageous mathematical
 147:11 characteristics for generating an accurate
 147:12 future interest rate -- a set of future
 147:13 interest-rate scenarios that would be accurate
 147:14 in pricing securities?

....

147:16 THE WITNESS: I wouldn't put it
 147:17 that way. What I would say is that --
 147:18 this is, I guess, more from a computer
 147:19 science point of view that I view this
 147:20 as a search problem where the system
 147:21 that Dr. Teytel is describing in here

147:22 is searching for particular seeds
147:23 among -- within a very large space.
147:24 And that the algorithm that
148:1 he's described to me and as described
148:2 in here, I can look at it and say that
148:3 it's -- it's got certain beneficial
148:4 characteristics in searching the space
148:5 a particular way.
148:6 I can't tell you whether it's
148:7 optimal. I can't tell you whether --
148:8 I can't tell you much about whether
148:9 it's the best way to do something, but
148:10 it makes sense that it's going to pick
148:11 things that are better than it might
148:12 otherwise pick.
148:13 BY MR. MUNVES:
148:14 Q. Eventually, it will pick --
148:15 eventually, it will pick an accurate sequence?
148:16 A. Well, that it's narrowing the
148:17 search range down into an area where it makes
148:18 sense that the right answer is going to be.
148:19 Q. But you can't tell whether it's
148:20 more effective than just brute-force searching
148:21 seeds and testing them -- testing the price of
148:22 securities that they price. You don't know
148:23 whether it works any better or worse than
148:24 that?

....

149:2 THE WITNESS: I think I have
149:3 said that I believe it's certainly
149:4 better than that.
149:5 BY MR. MUNVES:
149:6 Q. You said you believe it, but
149:7 what's your basis of that belief that
149:8 Dr. Teytel told you?

....

149:10 THE WITNESS: What he described
149:11 to me as the reasons made sense to me
149:12 from the -- from a computer science
149:13 point of view of searching the space.
149:14 BY MR. MUNVES:
149:15 Q. It's not based on any training
149:16 or experience you have in selecting, designing
149:17 or statistical theory in selecting effective
149:18 multidimensional sequences?

....

150:15 REPORTER: "QUESTION: It's not
150:16 based on any training or experience
150:17 you have in selecting, designing or

150:18 statistical theory in selecting
150:19 effective multidimensional
150:20 sequences?"
150:21 MR. MOORE: Objection.
150:22 THE WITNESS: Not specifically
150:23 that, as you posed it, no..

99. Polish Paragraph 19: In my deposition, I said that the seed 13812 comes from Teytel's notebook and is identified as the "Best" seed. I also said that with the seed and dram48, you can generate a 64-path sequence. This is quite contrary to Dr. Polish's claim. Dr. Polish was also wrong that I did not identify which were the "best" matched paths of the ACE 64 sequence and the best 64 path sequence generated by the "Best" seed "13812" from Dr. Teytel's notebook. In fact, I did make this identification and did give the matches to the Defendants. Even if I had not given the Defendants the best matches, this would be part of intermediate results and is of no scientific interest, as the overall measure of matches is used as the test statistic to see whether the overall matches are beyond the reasonable value of the independent selection. Defendants were given all of the code necessary to duplicate my analysis. No doubt they tested it and found it to be accurate. Otherwise, they would have criticized it. The fact that Dr. Polish could even make this complaint is additional proof that Dr. Polish has little understanding of the concepts and philosophy of statistics.

100. Paragraph 20—23: I only admitted the degree to which that we mixed up the input files and output files. We have not changed the code. The whole computation code was given to defendants to avoid the ambiguity of methodology and allow them to replicate my work. Dr. Polish has found no errors in my work because there are none.

101. Paragraph 24—25: The paths shown in the exhibit are correct. The correlation coefficient does not depend on the scale of the numbers and both paths are rescaled to have the same mean and standard deviations. Dr. Polish has already demonstrated a lack of training or experience in statistics that would qualify him to give an opinion on the subject. His contentions in these paragraphs only confirm his lack of knowledge in this field. Dr. Polish has the code; it is very simple to understand from the code exactly what has been plotted, to challenge the method that I used, and to contradict the results that are produced; but he has not been able to do so.

138. Dr. Fan's correlation analysis only compared the first eight dimensions and the first 16 and 32 paths of the 64 path sequence Dr. Hu generated from 13812 and ACE 64. Fan Report at 18-19 (Ex. 64). Although the Fan Report states that Dr. Fan "matched the first 8 dimensions of each of the 100,000 simulated 64-path sequences with the 64-path ACE sequence, and computed their average correlations for the best 16 and 32 matched paths," Fan Report at 18-

19, the Fan Report does not identify which were the supposed "best" matched paths of the ACE 64 sequence and the 64 path sequence Dr. Hu purportedly generated from seed 13812.

RESPONSE: Denied,

2nd Fan Decl.

99. Polish Paragraph 19: In my deposition, I said that the seed 13812 comes from Teytel's notebook and is identified as the "Best" seed. I also said that with the seed and dram48, you can generate a 64-path sequence. This is quite contrary to Dr. Polish's claim. Dr. Polish was also wrong that I did not identify which were the "best" matched paths of the ACE 64 sequence and the best 64 path sequence generated by the "Best" seed "13812" from Dr. Teytel's notebook. In fact, I did make this identification and did give the matches to the Defendants. Even if I had not given the Defendants the best matches, this would be part of intermediate results and is of no scientific interest, as the overall measure of matches is used as the test statistic to see whether the overall matches are beyond the reasonable value of the independent selection. Defendants were given all of the code necessary to duplicate my analysis. No doubt they tested it and found it to be accurate. Otherwise, they would have criticized it. The fact that Dr. Polish could even make this complaint is additional proof that Dr. Polish has little understanding of the concepts and philosophy of statistics.

139. If Dr. Fan had compared the first eight dimensions of all 64 paths of the sequence Dr. Hu generated from 13812 and ACE 64, the correlation would have been lower. Fan Tr. at 263:21-25 (Ex. 47) ("Q: Based on the charts that I'm looking at in the first four pages, is it fair to assume that the correlation would continue to decrease the further out you got? A: That's correct.").

RESPONSE: Admitted.

140. If Dr. Fan had included more dimensions of the sequence Dr. Hu generated from 13812 and ACE 64, the correlation would have been lower. Fourth Decl. of Polish ¶ 41.

RESPONSE: Admitted, but irrelevant as Dr. Fan included enough numbers to make the test mathematically fair:

2ND FAN DECL.

109. Polish Paragraph 38. This point has already addressed in the my response above. Dr. Polish does not understand the basic concept of hypothesis testing in statistics. This just further demonstrates what he has already shown by his previous ridiculous assertions, deceptive testing claims, and admitted lack of training or experience in this field. The test statistic that I designed is neither biased nor skewed in any way. Defendants' sequences were selected using arbitrary criteria to select the seeds used with the public-domain pseudo random number generator which cannot be expected to create a sequence that is any more accurate than random chance. The tests they claim to have run after generating their sequences change nothing because successfully pricing one benchmark portfolio says nothing about the ability of a sequence generated randomly like this to accurately price another portfolio. The method suffers from selection biases and chance variability. Thus, correlating their sequences against sequences selected arbitrarily is a fair test.

110. Paragraph 39. This again shows that Dr. Polish does not understand at all the concept of the test statistics and the well-known concept of hypothesis testing. As I testified in the deposition, 64 paths can be permuted in a random matter, yet the price of MBS remains the same. Therefore, any programmer would permute the paths to hide the trace of copying and targeting. In order to deal with the random permutation, one has to find the first best match, the second best match, the third best match, and so on. One does not need to find all 64 matches, as Dr. Teytel could have just targeting 16 or 32 paths from an ACE sequence. Matching further obscures the goal of the study. The test statistic is fairly evaluated, as other random seeds are subject to the same method of scrutiny. The same test standard applied to the seed 13812 as to other 100,000 seeds that were randomly selected. The procedure is absolutely fair and sound. Clearly, Dr. Polish does not understand the concept and made an inappropriate comparison.

111. Paragraph 40. This has already explained above. Both the best 16 matches and best 32 matches result in sound test statistics. Both of them indicate that the matches between an ACE 64 sequence and the sequence produced by seed 13812, identified as the "Best" seed in Teytel's Notebook, are much closer than usual, with a probability of 2.4%. The argument of Dr. Polish is completely irrelevant. His reasoning is similar to questioning why we compare only the faces of two persons, which comprises less 25% of the whole body, to determine whether the two persons are from the same race. It is a silly question.

112. Paragraph 41. This has been explained above. The same analogy above continues to apply.

141. Applying Dr. Fan's methodology and formula for correlation demonstrated that Defendants' Yield Book 100 sequence is not correlated to ACE 64 any better than the majority of 100,000 sequences generated from randomly selected seeds. Fourth Polish Decl. ¶¶ 44-47 (Ex.).

RESPONSE: Denied.

2nd Fan Decl.

116. Polish Paragraphs 44—47. Dr. Polish’s logic used here is mistaken as explained in above. Therefore, the results are of no value. In an effort to confuse matters, Dr. Polish has compared ACE 64 to an entirely different sequence than I used rather than verifying my tests with the code and data I provided him for that purpose. Dr. Polish’s test says nothing about my test or anything definitive about what Defendants did or did not do. The correlation with “the 100 path sequence actually used in the Yield Book” has no bearing on my analysis.

117. Furthermore, Dr. Polish has made mistakes in his calculation, in addition to the fatal error spelled out above with respect to using 8 rather than the 16 numbers I used. The mistake is that in the YB 100 path mixed seed sequence, the numbers in the first factor for the first path and second path are highly dependent. Suppose that 8 numbers of the first factor in the first 8 time steps are (1, 2, 3, 4, 5, 6, 7, 8). Then, the 8 numbers of the second factor in the first 8 time steps are simply: (-1, -2, -3, -4, -5, -6, -7, -8). This kind of pattern continues for the rest 98 paths, due to the antithetic method used in the YB 100 path sequence. Any statistician would understand that the derivative paths such as (-1, -2, -3, -4, -5, -6, -7, -8) should be eliminated before the correlation analysis. But, Dr. Polish’s did not do this.

Rebuttal of Dr. Polish’s Fourth Declaration (XI):

Defendants appear to have another 100 path mixed-seed sequence that they did not produce.

118. In addition, Dr. Polish did not use the data from “Yield Book 100” that Defendants produced in this case. He stated in his Fourth Declaration that “Using Dr. Fan’s methodology and formula for correlation, I compared correlation of ACE 64 and the 100 path sequence actually used as input to the Yield Book after defendants tested ACE and after Dr. Teytel developed his mixed seed methodology (“Yield Book 100”) to the correlations of ACE 64 and 100,000 100 path sequences generated from randomly selected seeds” (Polish Fourth Declaration paragraph 45). I examined the sequence numbers in the file produced by Defendants (CGM 04945 in the file called rand_num_100_199991101_86int). These numbers were represented as being the mixed-seed 100 path production sequence. Yet these numbers were a different sequence of numbers than the sequence of numbers that Dr. Polish claimed were from the “Yield Book 100” and which he used in his calculation (the excel file contained in the CD marked CGM 07073 file correlation-YB100-ACE-

ACE). The sequence numbers are very different when they are suppose to be identical. For example, I searched the first number (the first factor in the first time step of the first path) “0.452040” from the “Yield Book 100” I found in the CD marked CGM 04945 in the file called rand_num_100_199991101, which was produced by Defendants in discovery and is alleged to contain the 100 path mixed-seed production sequence. The excel file in the CD marked CGM 07073 allegedly containing the 100 path-mixed seed sequence Dr. Polish used did not contain this number (either in the first factor or second factor of YB 100. I tried also tried several other numbers from the “Yield Book 100” and could not find them either. With this mistake, none of Dr. Polish’s conclusions about ACE or the 100 path mixed-seed sequence are valid. It looks like Defendants had another 100 path mixed-seed sequence that they did not produce. This also casts serious doubt of the fidelity of Dr. Polish’s analysis and further doubt about the accuracy and completeness of Defendants’ production in this case.

J. The Methods For Generating the ACE Numbers and the Yield Book Sequences Are Different

142. Any sequence of numbers designed to be used in valuing MBS will, as a byproduct, approximate the standard normal density distribution. Fan Tr. at 215:07-216:07 (Ex. 47) (“Q: So I’m clear the goal ... when creating sequences to price securities is to create a sequence that approximates as closely as possible the standard normal density at each time step? A: At each time step, but also like each path ... Q At a minimum the initial goal is to try and approximate the standard normal density distribution for each time step and for each path? A: I wouldn’t say this is [the] initial goal, ... as a by-product you would like that to be close.”).

RESPONSE: Objection to the reference to any “sequence of numbers”, which reference is vague, ambiguous and misleading. By way of further response, denied. Dr. Fan’s testimony, as quoted above, was, “as a by-product *you would like that* to be close”. 216 (Ex. 47) (emphasis added). In other words, approximating the standard normal density distribution is a goal, but that

goal is not necessarily achieved by every sequence of numbers designed to be used in valuing MBS. In fact, for a sequence of as small a number of paths as 64, there are significant derivations at each time step from the standard normal distribution. (Fan Dec. at __; Wang Dec. at __.)

RESPONSE: Denied. Objection to the reference to “any sequence of numbers”, which reference is vague, ambiguous and misleading. By way of further response, denied. Dr. Fan’s testimony, as quoted above, was “*I wouldn't say this is [the] initial goal*”. Dr. Fan only said “*as a by-product you would like that be close.*” In fact, for a sequence of a small number of paths, there are significant derivations from the standard normal distribution. Wang Decl.,. See Wang Dec. para. 6:

6. Defendants’ reference to ACE as the “ACE Numbers” is vague, incorrect and inaccurate. An ACE sequence can be represented by a matrix of numbers, which are arranged in rows and columns. Such representations and the numbers are by no means unique, and can take greatly many forms. There are very many ways to derive potentially effective but completely different looking sequences from a good sequence such as ACE. From discovery to date, I understand that evidence indicates AAI’s claim that Defendants have used the stolen ACE to select such derivative sequences generated by their public domain, pseudo-random sequence generator with multiple seeds, for the use of their Yield Book clients. Any sequence of small number of paths in a high dimension space may not approximate standard normal distribution well at every dimension. Therefore, if a Defendants’ sequence has very similar distribution to the stolen ACE, (this has been inaccurately phrased by Defendants’ counsel as “Defendants copied or stole ACE distribution”), it is evidence supporting AAI’s claim of targeting or reverse engineering.

If a Defendants' sequence has unusually high correlation to the stolen ACE, it is also evidence to AAI's claim of targeting. The converse may or may not be true. For example, if Defendants did not target the stolen ACE along the time step direction and did it some other way, then the correlation between the ACE derivative sequence and ACE may not have to be higher than usual.

143. If two sequences are derived using different methodologies and consist of different numbers, the sequences are different. Wang Tr. at 119:23-220:5 (Ex. 10) ("Q: Knowing just that limited amount of information that [two sequences] are derived using different methodology and that they consist of different numbers, you can testify today that they are in fact different sequences?" A: Yes, that's correct.").

RESPONSE: Objection to the reference to "sequences . . . [that] consist of . . . numbers", and also to the reference: "the sequences are different." Each of these references is vague, ambiguous and misleading. By way of further response, denied. There are many ways to derive potentially effective but completely different looking sequences from a good sequence such as ACE. Discovery in the present litigation establishes that Defendants have used ACE, which they stole, to select derivative sequences that Defendants generated by the use of public domain pseudo-random sequence generator with multiple seeds. Wang Dec. para. 4. Defendants' generator with multiple seeds produces all gazillions of lattice sequences in the universe, including all the low discrepancy sequences ("LDS"). Therefore even if Defendants did not use LDS generator, its generator could still copy a stolen LDS sequence. Id. para. 2. A "different" sequence derived from ACE could be just as effective as the targeted ACE sequence. By way of further response, AAI repeats and incorporates by reference its responses to No. 13

144. Pseudo random numbers are different than low-discrepancy sequences. Wang Tr. at 175: 4-10 (Ex. 10) ("Q: A pseudo random number generator I take it generates pseudo random numbers? A: Yes. Q: Pseudo random numbers are different than low-discrepancy sequences? A: Yes."); id. at 175: 11-18 ("Q: [I]f pseudo random numbers are generated using a pseudo random number generator, how are low discrepancy sequences generated? A: Low discrepancy sequences are generated by certain formulas and they are not generated by pseudo random number generators ... "). The ACE Numbers are low-discrepancy sequences. Wang Tr. at 172:23-25 (Ex. 10) ("Q: The ACE sequences are low discrepancy sequences? A: Yes."); id. at 193:19-20 ("A: the [ACE] sequence itself in each dimension are generated by a precise mathematical formula "); id. at 138:24-139:14: ("Q: The ACE numbers are not a pseudo random sequence? A: Right... Q: Are they a low discrepancy sequence? A: You can say so, yes. Q: Low-discrepancy sequences are different than pseudo random numbers? A: That's correct."). The Yield Book sequences are pseudo random numbers. Russell Decl. ¶ 3 ("the random number generator [in the Yield Book production code] produces a set of numbers that are referred to as pseudo-random numbers").

RESPONSE: Objection to the reference to the word “different”, which, in the context of No. 144, is vague, ambiguous and misleading. By way of further response, denied as stated. The definition of pseudorandom sequences and low discrepancy sequences are different, but Defendants public domain “random number” generator with multiple seeds produce all lattice sequences in the universe, including all the low discrepancy sequences, and ACE. Wang Decl. Para. 2. By way of further response, AAI repeats and incorporates by reference its responses to No. 143 and No.22.

145. If one were to change either the seeds or the random generator used by the Yield Book, the Yield Book sequences would necessarily change. Russell Tr. at 294:25-295: 14 (Ex. 7) ("Q: If ... you don't change any of the environmental variables or change anything and you used the same seed every time and you specified 116 intervals, you would always get the same random numbers in the sequence generated; is that correct? .. A: We end up with the same random numbers for - if you're - number of time intervals is the same, yes. You end up with the same random numbers on each run, assuming the seed is not changed when we're talking about the paired sequences").

RESPONSE: Admitted.

146. According to Dr. Wang, the ACE Numbers would not change if the seeds or random number generators used in connection with the development of the ACE Numbers were changed. Wang Tr. at 716:23-717:12 (Ex. 10) ("Q: [You] start with the seed. One seed? A: Right. Q: You feed that one seed into a random number generator? A: Right. And - Q: Your testimony is it doesn't matter what type of random number generator? A: Yes. It does not matter. Q: So you take the one seed. You put it into any random number generator. Then what happens? A: Then you would have to find the best formula. Know the best formula. And then formula would generate the sequence."); _id. 773:5-7 ("Q: If you change the seed, does it change the formula? A: No. You don't.").

RESPONSE: Plaintiff repeats and incorporates by reference its objection to No. 13. By way of further response, denied. Defendants misinterpreted Dr. Wang's answer. Dr. Wang never said "the ACE Numbers would not change". He said that "the type of random number generator" "does not matter" to the [high] quality of ACE sequences. Wang Dec. para. 7. Preceding Defendants' cites Wang Tr. at 716:23 -717:12 clearly shows that: "Q. What type of random

number generator? A. Random number generator, it's not important. Any [would] be the same.”
Id. 715:15-18, In fact the type of random number generator also does not matter to the [generally low] quality of random sequences.

Wang Decl. 7

7. When Defendants’ attorney asked me at deposition on October 25, 2007, “Your testimony is it doesn't matter what type of random number generator? A: Yes. It does not matter.” Wang Tr. at 716:23 -717:12 (Ex. 10), I meant it does not matter to the quality of ACE sequences. I never said “the ACE numbers would not change”. Of course, the “ACE numbers” will certainly change if a different type of random number generator is used.

.147. The methodology for generating the Yield Book sequences employs variance reduction techniques known as centering, orthogonalization and antithetic sampling. CGM 00176-177 (Ex. 46); Russell Decl. ¶ 3. The methodology for generating the ACE Numbers does not employ the variance reduction techniques known as centering, orthogonalization or antithetic sampling.

Wang Tr. at 750:17-22 (Ex. 10) (“A: ... The sequence I produced by my formula ... [is] already past those kind of procedure to do this for random number generator -Latin hypercube. There's no need for either centering, orthogonalization, or antithetic [sampling].”).

RESPONSE: Plaintiff repeats and incorporates by reference its objection to No. 13. By way of further response, admit that Defendants’ sequence generator may employ certain public domain variance reduction techniques, that the stolen ACE sequences have already achieved great accuracy without having to apply variance reduction techniques. However, by using variance reduction techniques, e.g., antithetic sampling, ACE sequences can achieve even greater.

K. Damages

148. AAI's evidence to support its damages claim is found exclusively in the Expert Report of Dr. Russell Mangum ("Mangum Report"). Defendants' Fourth Set of Interrogatories No. 13 (Ex. 70) ("Identify with particularity each and every basis supporting your contention that you are entitled to damages and/or disgorgement in excess of \$250 million."); Supplemental Responses to Defendants Fourth Set of Interrogatories No. 13 (Ex. 71) ("See Expert Report of Dr. Mangum."); Mangum Report at 1 (Report purports to address AAI's damages for the "alleged unauthorized possession and use of AAI's proprietary ... ACE technology. ").

RESPONSE: Denied. It is also found in the documents cited in, or attached as exhibits to, the Mangum Report; in the deposition transcript and exhibits of Dr. Mangum; in the report, including exhibits, of Dr. Sanders, Defendants' damages expert; and in Dr. Sanders' deposition transcript and exhibits. In addition, AAI has sought and moved to compel discovery concerning Defendants' profits, which are a further element of AAI's damages claim.

149. The Mangum Report relies on the assumption that licensing terms Dr. Wang proposed to defendants in the June 2 Proposal "reflected the understanding between SSB and AAI under which ACE would be licensed." Mangum Report at 8 (Ex. 73); AAI 0831-834 (Ex. 34) (June 2 Proposal).

RESPONSE: Admitted, except that Dr. Mangum provides substantial evidence and explanation as to why it is reasonable to rely upon this assumption, reviewing extensive evidence establishing the reasonableness of assuming that the June 2, 1998 Terms reflected the parties' understanding. See, e.g., Mangum Report at 6-8; Mandel deposition (attached to AAI's brief in opposition to summary judgment) at 2-22, 18-19, 26-28, 53, 78, 80

150. AAI asked Dr. Mangum "to assume that evidence will be presented at trial to establish that AAI and SSB were in effective agreement with respect to these terms, and to perform my calculation of the resulting lost license revenue to AAI." Mangum Report at n. 33 (Ex. 73).

RESPONSE: Admitted.

151. The June 2 Proposal does not bear any signature by Defendants. AAI 0831-834 (Ex. 34).

RESPONSE: Admitted.

152. The June 2 Proposal is labeled "preliminary draft." AAI 0831-834 (Ex. 34).

RESPONSE: Admitted that those words appear on the June 28, 1998 Terms.

153. The Mangum Report does not contain any analysis or offer any conclusion as to whether the royalty specified in the June 2 Proposal was reasonable. Mangum Tr. at 168:21 - 169:3 (Ex. 74) ("Q: Did you conduct an independent analysis to determine whether or not the terms and conditions themselves [of the June 2, 1998 Proposal] were reasonable? A: It - If what you mean by an independent analysis is do I also have the expert opinion that it's a reasonable payment, no.").

RESPONSE: Denied. AAI repeats and incorporates by reference its response to No. 149.

154. The Mangum Report assumes the June 2 Proposal reflects an agreement in perpetuity. Mangum Tr. at 269:9-11 (Ex. 74) ("A: ... In the absence of direction as to what to do after year five, I've assumed that the same structure would keep applying.").

RESPONSE: Denied. The Mangum Report provides damages estimates only through March 2007, and prejudgment interest only through September 2007. Mangum Report, 9-10.

155. The analysis in the Mangum Report does not reflect a consideration of how Defendants would have actually used the ACE Numbers had there been a licensing agreement. Mangum Tr. at 75:4-6 (Ex. 74) ("Q: Does the-the way that Dr. Wang's product is used affect in any way the payment structure that you applied to making the calculation of lost license revenue? A: I don't think the way his product is used affects the way I calculated damages ... ").

RESPONSE: Denied. The Mangum Report makes assumptions about use in connection with both the lost license revenues damages estimate (8-9) and the disgorgement damages estimate (9). In addition, Dr. Mangum observes that AAI asserts that "steps were taken that enabled SSB to obtain and use the intellectual property and trade secret(s) contained in ACE" and that "SSB took steps to incorporate the ACE technology within its own systems". (Mangum Report at 8) (footnote deleted).

156. Any profits Defendants allegedly made using the ACE Numbers were not derived at AAI's expense. Memorandum and Order dated October 9, 2007 at 7, n.2 (Ex. 75) ("Defendants' profits were not derived at plaintiff's expense.").

RESPONSE: Objection on grounds that this calls for a legal conclusion and, in addition, is vague and ambiguous in its reference to "profits . . . not derived at AAI's expense." By way of further response, AAI is entitled under the law to Defendant's profits and to disgorgement damages. By way of further response, Defendants' wrongful acts and profits were at the expense of AAI in that AAI lost revenues and profits in an amount to be determined by the jury at trial

Dated: New York, New York
April 24, 2008

Respectfully submitted,